

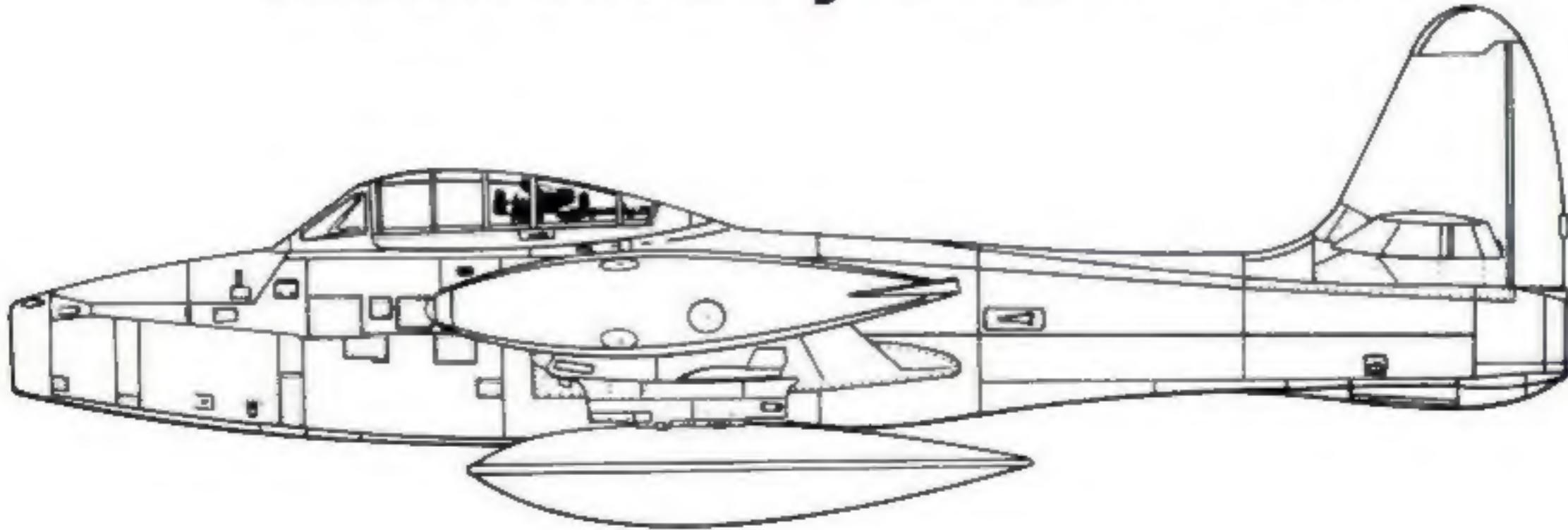
# F-84 THUNDERJET in action



# F-84 THUNDERJET

## in action

by Larry Davis & David Menard  
Illustrated by Don Greer



Aircraft Number 61  
squadron/signal publications



# Introduction

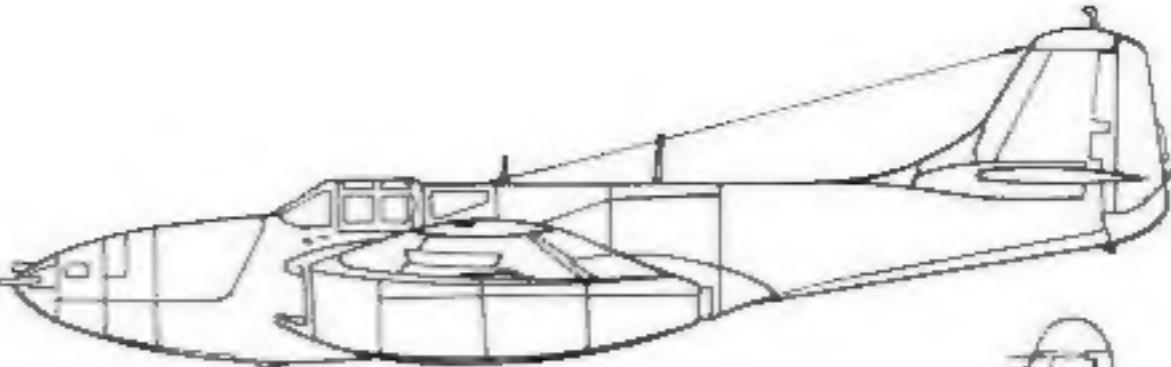
During World War II, a name that was synonymous with heavily-armed fighter aircraft capable of both dishing it out and taking everything the enemy gave, was Republic Aviation Corporation. Republic was the descendant of Seversky Aircraft Corporation headed by the legendary Major Alexander P. Seversky. The Seversky design team, led by Alexander Kartveli has been responsible for such famous designs as the Seversky P-35 and P-43, the Republic P-47, F-84, F-84F, and the F-105.

The Kartveli team had a knack for going against the tide, for picking the wrong equipment, putting it in the wrong airframe, and coming up with the right design at the right time. During June of 1940, while Hitler's Panzer Divisions, under the protection of the Luftwaffe, were knifing through France; at a time when all of the other major US aircraft manufacturers were busy designing aircraft around the new Allison liquid-cooled Vee-12 in-line engine, with a small frontal area and streamlined nose, the Kartveli team decided to use a supercharged radial aircooled engine and design an airframe around it. Using the new Pratt and Whitney XR-2800 Double Wasp as its heart, the Kartveli team came up with a design that would eventually become the scourge of Hitler's panzers, while more than holding its own against the vaunted Luftwaffe. It was big, heavy, and rather unstreamlined. But it was rugged, overpowered and could pack a very nasty wallop. It was the P-47 Thunderbolt.

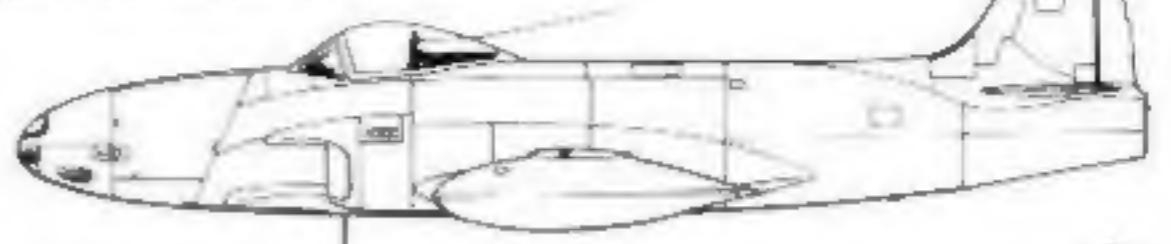
With the introduction of jet aircraft into the combat arena over Europe, a crash program to bring the United States into the competition was begun. Bell Aircraft Corporation was the first successful US manufacturer to deliver a jet-engined aircraft to the US Armed Forces — the XP-59 Airacomet. Lockheed Aviation followed quickly with the P-80 Shooting Star. Both aircraft were powered by centrifugal flow gas turbine engines. The Kartveli team was instructed by the Army Air Force to design an aircraft around the new General Electric TG-180 axial-flow turbojet engine. Again, Kartveli's team was going against the industry 'norm', since both the already successful Lockheed P-80 Shooting Star, and the new Grumman XF9F Panther were powered by the centrifugal-flow Allison J33 engine. However, use of the axial-flow TG-180 would mean a slight reduction in drag through a more streamlined fuselage, and better fuel economy, something the early jets were not known for.

The Army Air Force General Operational Requirement (GOR) called for a "mid-wing day fighter aircraft with a top speed of 600 mph and a combat radius of 850 miles." The aircraft would have eight .50 calibre M2 machineguns as its main armament, and would be designated the XP-84. With the GOR in mind, Kartveli's team initially attempted to mate the new jet engine to a modified P-47 Thunderbolt airframe. Several design studies were done in an attempt to streamline the 'Jug' enough to meet the GOR. Finally, in October of 1944, Republic abandoned the idea of a jet powered Thunderbolt in favor of an all new design. On 11 November 1944, the Army Air Force officially accepted the all new design and authorized Republic to build three XP-84 airframes. No 'competition' was held between the P-80, the XP-84, and the XP-86, since each was significantly better than the other and years apart in development (the P-80 was already in production, and the P-86 wouldn't fly for two more years).

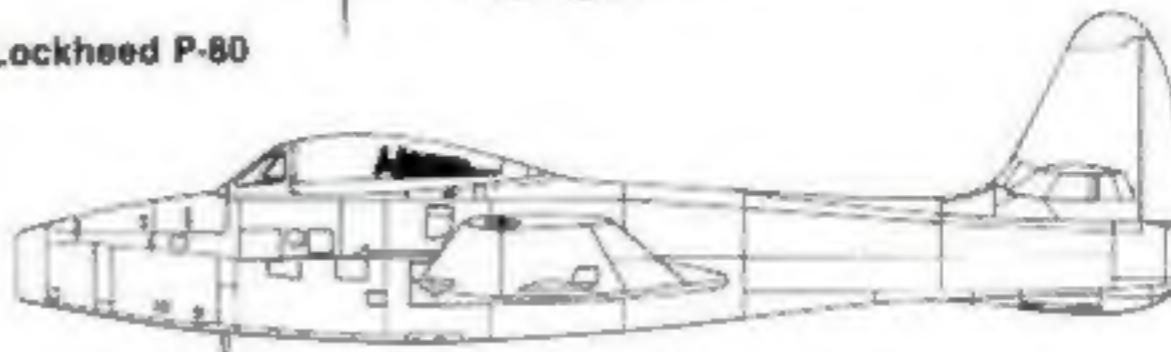
The XP-84 mock-up was unveiled at the Farmingdale, Long Island plant in February 1945. Army Air Force liked the new XP-84 so well that a further contract was let calling for 25 test aircraft (YP-84As) and 75 production aircraft (P-84As). The contract was later changed to 15 YP-84As and 85 P-84As. The new design bore no resemblance at all to the proposed jet-engined Thunderbolt. The new fuselage was long and slender with the jet intake being in the nose, and the cockpit area entirely forward of the wing. The landing gear was of the tricycle variety, meaning the aircraft had a nosewheel instead of a tailwheel. The landing gear had extremely long legs making the aircraft sit very tall, a nice feature for taxiing. As with the Thunderbolt, the main landing gear hydraulically collapsed so as to fit into as small a bay as possible. Another new feature was the engine being aft of the wing, with the entire rear fuselage being unbolted for complete removal during engine



Bell P-59 Airacomet



Lockheed P-80



Republic XP-84

Rollout of the XP-84, completely devoid of all markings. Extremely clean lines, caused by an airframe being designed around an axial-flow engine, are quite evident. (AFM)



maintenance.

In December 1945, ten months after the mockup was completed and accepted by the Army, the first prototype XP-84, serial 45-59475, rolled out of the Farmingdale plant. Following a quick press conference and rollout ceremonies, the aircraft was disassembled, loaded aboard the new Boeing XC-97 transport aircraft, and flown to the Army Air Force test facility at Muroc Dry Lake, California, now called Edwards Air Force Base. After reassembly, the XP-84 was ground tested and made ready for its maiden flight. Major Wallace Lain and the XP-84 lifted off the Muroc runway for the first time on 26 February 1946. Not only was it the first flight for the XP-84, it was also the first time the Allison J35 engine had powered an aircraft in flight. The second prototype was finished, shipped to Muroc, and flown for the first time, all during the month of August 1946. On September 7th, the No. 2 prototype set a new US National Speed Record of 611 mph. It was 5 mph short of the World Speed record held by a Gloster Meteor F.4.

The third prototype, serial 45-59477, was completed with so many changes, in both the aircraft and the engine, that it was redesignated the XP-84A. NACA wind tunnel tests began showing some unsatisfactory longitudinal stability characteristics. The airframe changes needed to overcome the stability problems would add still more weight to an already overweight aircraft. Additionally, the General Electric J35-GE-7 engine was replaced by the Allison J35-A-15 engine rated at 4000 lbs. static thrust, 250 lbs. more than the General Electric powerplant.

During this extremely critical stage of the XP-84 development, Republic began experiencing financial problems. Even though Republic had built and sold over 15,000 P-47 Thunderbolts during World War II, the cost of developing the new jet fighter rapidly ate up available funds. At one point in October 1946, Republic had only enough cash on hand to continue operation for three more weeks. Republic asked Army to begin payments on the production contract, the first aircraft of which would not be delivered for another eight months. After a thorough investigation of the financial plight of the company, Congress and Army decided to go ahead with the payments. These payments, plus a tax refund check for \$6,000,000.00 in May 1947, kept Republic and the P-84 program alive.

Deliveries of the 15 YP-84As began in February 1947, with half the aircraft going to Muroc and the other half going to the Army Air Force test facility at Wright Field, near Dayton, Ohio. The YP-84As had the same engine as the XP-84A, an Allison J35-A-15. However, the YP-84A was the first model to have armament. The original GOR requirement was for an armament of eight .50 calibre M2 machineguns. This was changed to six guns when the original Jet-Thunderbolt design was dropped. Four of the guns were in a bay in the upper portion of the nose, while the remaining pair were mounted in the wing root. The YP-84As were also the first of the P-84 series to carry wingtip fuel tanks, a common sight on all the straight-wing P-84 series. The YP-84As would subsequently be brought up to P-84B standards with the addition of an ejection seat, air conditioned cockpit, and being rearmed with M3 machineguns.

Within the Initial Letter Contract, issued on 4 January 1945, was an order for an initial batch of 100 aircraft, plus the three prototypes. There was to be 25 service test YP-84As, and 75 production P-84Bs, at a cost not to exceed \$17.5 million. The cost for three XP-84/XP-84A airframes, one static test aircraft, several small wind tunnel models, spares, and data, was covered in contract W33-038-ac-11052, and finalized at \$2.6 million. Army would supply engines, bailment aircraft, ground and test equipment, and all test facilities. The January 1945 Letter Contract cost was amended to \$24 million, and the number of service test aircraft was dropped to fifteen, while increasing the number of production P-84Bs to 85. Eventual 'flyaway cost' of the first 100 YP-84A/P-84B aircraft was \$286,407.00 per aircraft.

Problems within the P-84 program notwithstanding, the Army Air Force still wanted the P-84. In 1946, the Army contracted for a further two lots of P-84 aircraft. The first order was for an additional 141 P-84B aircraft. With this contract the flyaway cost per aircraft was reduced to \$163,994.00. The second contract was for 271 P-84C aircraft. However, with all the problems that the P-84 program was having, Army reduced the total contract from 271 to 191 aircraft in order to buy additional Lockheed P-80s. With the new contract, the cost again dropped, down to \$147,899.00 per aircraft.

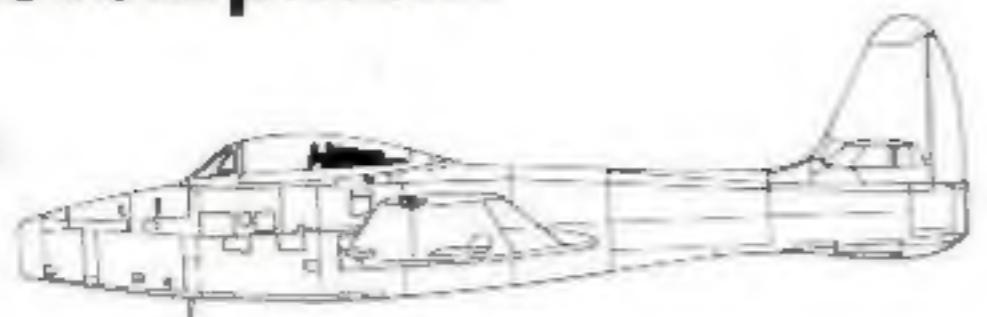


The No. 1 prototype XP-84 in flight over Muroc Field, in 1946. It is painted in the light Pearl Grey that was scheduled to be the standard paint scheme for Army Air Force jet fighter aircraft. The painted surface was supposed to cut through the air better than an unpainted, or natural metal surface. But the paint peeled badly at high speeds, causing an even greater loss in airspeed and the Air Force switched back to natural metal. Note the pitot boom on the port wing and the radio antennae under the forward fuselage. The buzz number was repeated on the underside of the left wing. (Republic via Monard)

With contracts in hand, and money already flowing in on the contracts, Republic and Army Air Force set out to make the P-84 series everything that was called for in the original 1944 General Operational Requirements. The problems, both within the P-84 program and with the Allison J35 powerplant, would eventually be ironed out. Of course, by the time all the problems were ironed out, the aircraft would be obsoleted by the new swept-wing fighters, including Republic's own F-84F series. The P-84 series would evolve through five significant variants culminating with the atomic-armed, super long-legged F-84G. Three models of F-84 would be blooded in the Korean War, where they would earn the title 'Champ of the Fighter-Bombers'.

# F-84 Development

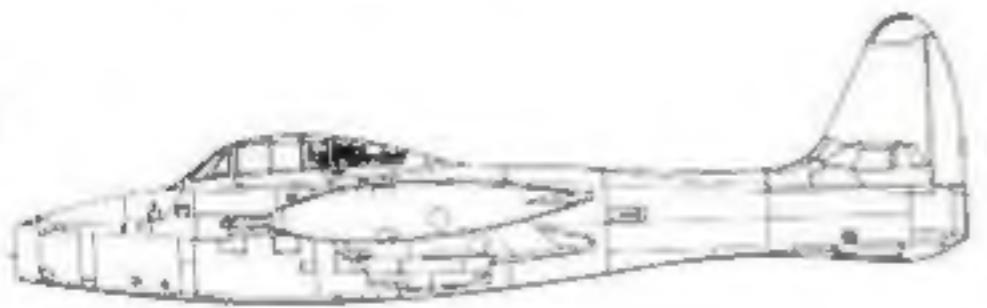
XP-84



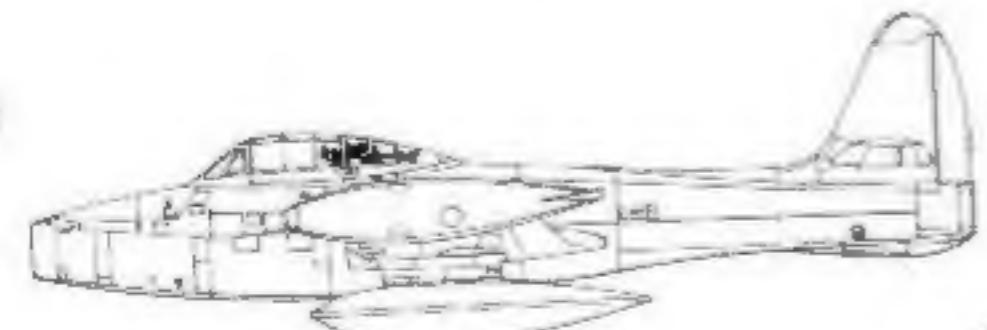
P-84B/C/D



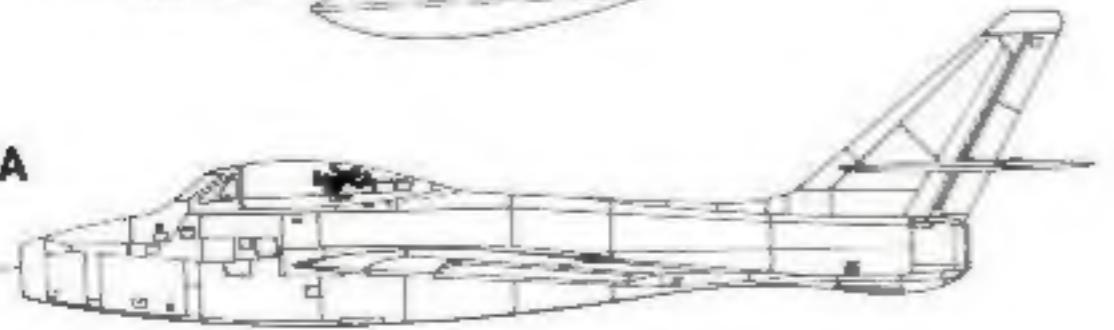
F-84E



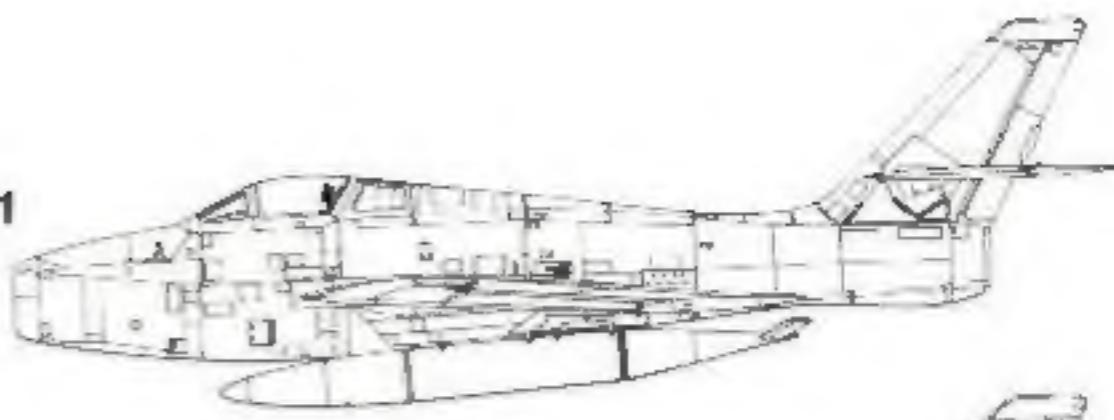
F-84G



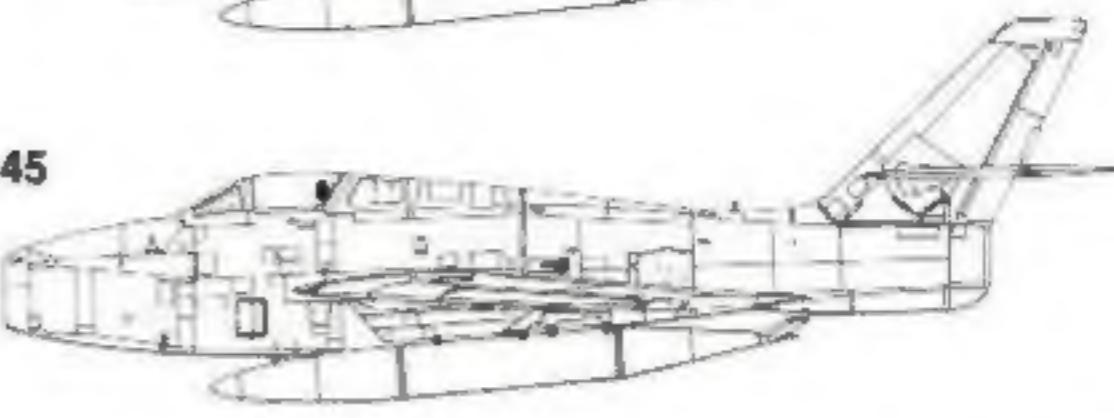
YF-96A



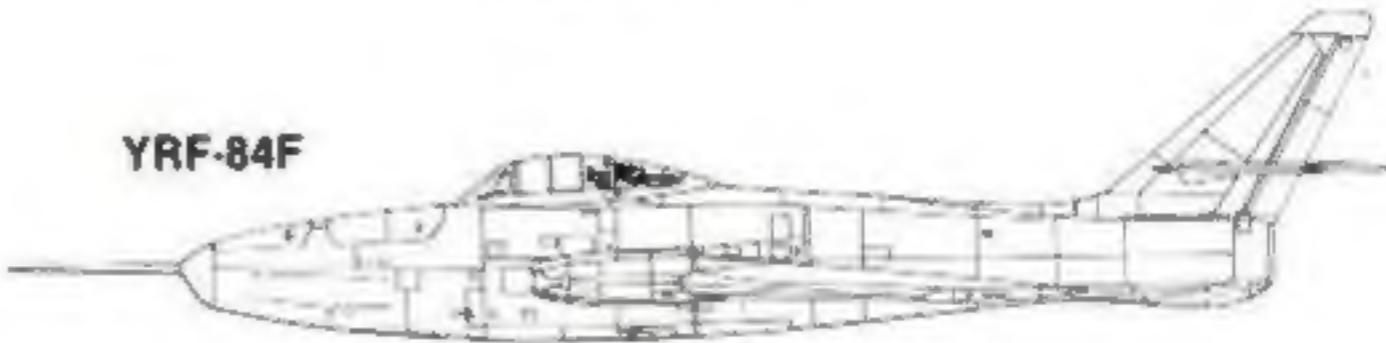
F-84F-1



F-84F-45



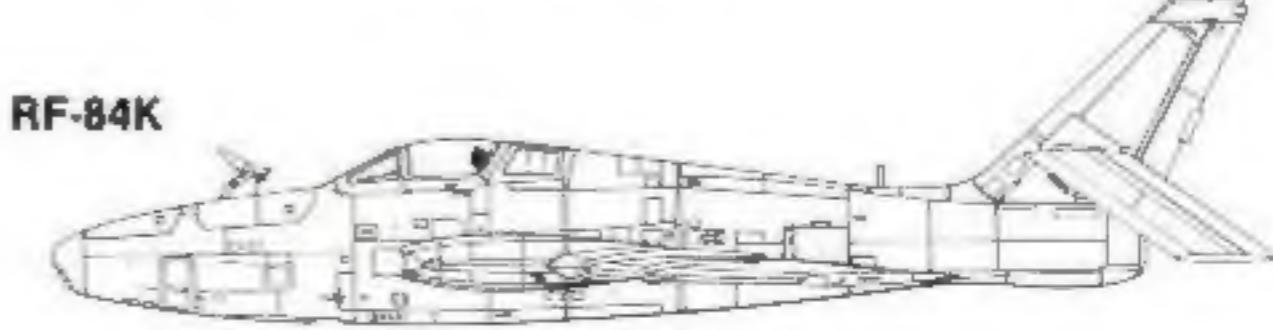
YRF-84F



RF-84F



RF-84K



# P-84B

The first production aircraft, the P-84B, was very similar to the YP-84As but was armed with six M3 .50 calibre machineguns in place of the M2 guns in the YP aircraft. The M3 had a rate of fire of 1200 rounds per minute — 400 rounds per minute faster than the M2 gun. In addition, the B model incorporated an ejection seat (which the pilot was not authorized to use), a pair of 230 gallon wingtip fuel tanks, and retractable underwing rocket launch slugs and bomb pylons.

In November 1947, the 14th Fighter Group, based at Dow Field, Maine, became the first unit to begin operations in the new P-84B. The P-84 series was officially named "Thunderjet" by Republic during the Fall of 1948. It was the second aircraft in a long line of Republic aircraft that would bear the 'Thunder' name. In 1947, by Congressional Act, the US Air Force became a separate service from the Army and Navy. One of the first things the Air Force brass did was to eliminate the term 'Pursuit' from the Air Force vocabulary. All Pursuit planes became 'Fighter' planes. Thus the P-84 series was redesignated to F-84 on 11 June 1948.

Problems within the P-84 program began to mount as the P-84Bs began to enter service. Trim reversal, fuselage skin wrinkles, lack of spare parts and supplies, and poorly trained jet maintenance crews all contributed to the Thunderjet's nickname of Mechanics Nightmare. The problems culminated in the grounding of the entire F-84 fleet on 24 May 1948, following some rather serious accidents resulting from various structural failures. After all the aircraft were inspected and declared airworthy, they were again placed on flight status — but with limits. All aircraft were limited to 0.80 Mach top speed; and 'G' loads were limited to 5.5.

In June 1948, the last of 228 F-84Bs came off the Farmingdale production line. The original P-84B contract had been for 500 aircraft, however, after all the changes to correct problems in the P-84 series, Army Air Force decided that the remaining 274 aircraft on the contract should be completed as P-84Cs and Ds. The average flyaway cost of the P-84B program was \$225,500.00 per aircraft. In May 1949, an \$8 million modification program brought all the F-84Bs up to structural standards of the rest of the F-84 fleet by reinforcement of the aircraft's wings and making over a hundred other internal modifications. Even with all the modifications, the F-84Bs were rapidly phased out of active Air Force service. Finally, in late 1952, the last F-84B was phased out of service with the Air National Guard.

## Control Stick and Lock



## Ejection Seat



This standard production F-84B from the 14th Fighter Group based at Dow Field, Maine, is seen at the National Air Races held in Cleveland, Ohio in 1948. Note that the "F" in the buzz number on the nose is actually a shortened "P". The Air Force did away with the "Pursuit" designation in 1948, replacing it with "F" for "Fighter". (Esposito)



"Virginia S", a 20th Fighter Bomber Group F-84B over Langley, Virginia in 1948. Note the lack of stabilizing fins on the wingtip tanks. (USAF via Menard)

The 37th Fighter Squadron commander flew F-84B serial 46-886, hence it carries the three Black and Yellow bands around the rear fuselage denoting a squadron commanders aircraft. The nose ring and barberspole tail stripes are also Black and Yellow, while the tip tank flash is Yellow only. The 14th FGp, first unit to go operational in the F-84B, adopted the barberspole tail stripes as their unit marking after seeing an illustration of a similarly painted aircraft on the cover of a 1946 Air Force magazine. (Esposito via Menard)





Perhaps the gaudiest markings of all the F-84 units were those found on 86th FGp F-84s when Colonel George Laven was in command. He changed the unit markings from simple horizontal stripes on the vertical and horizontal tail surfaces, to complete coverage of the entire tail assembly in a Red and White checkerboard, with a checkerboard on the nose ring and tip tanks in the appropriate squadron color, in this case Red and White for the 526th FB Sq. Note the braced canopy, developed for the F-84G, and was retrofitted to all previous models. (Castle Graphics)

YP-84A

#### 230 Gallon Wingtip Tanks



An overall International Orange target tug F-84B from the North Dakota Air National Guard. Note the heavy weathering of the paint and removal of the buzz number. (Slowiak)



## F-84C

Differences between the F-84B and the F-84C were small, but significant to the program. The F-84C was powered by the Allison J35-A-13 in place of the -15 engine found in the F-84B. Although the -13 engine was of an earlier design than that used in the F-84B, the -13 engine had a much more compatible fuel system for the F-84 mission. The thrust remained the same as that of the -15, being rated at 4000 lbs. Other changes included an all-new electrical system, better fire seals around the engine compartment, and a sequencing bomb release control.

The F-84C suffered from many of the same problems as the B model, with Air Force putting all the F-84Cs through the same modification program as the B models in 1949. The first to go operational in the F-84C was the 33rd Fighter Group in 1948. In 1949, the group moved from Kirtland AFB, New Mexico, to Otis AFB, Massachusetts. 191 F-84Cs between May 1948 and November 1948. Final cost per aircraft \$100,000. With all the similarities between the F-84B and C, Air Force phased them into service at almost the same time as the B. The last F-84C was phased out of inventory in 1952.

The 31st FGp at Turner AFB, Georgia, was the second unit to receive the F-84C. Group markings were alternate 8 inch Black and Silver checks on the nose. The nose cone to the checks, tip tanks, and fin tip were painted in the squadron color, in this case red for the 308th FBSq. The letter on the tail was the flight indicator — B Flight. One circle around the rear fuselage indicates an element leader's aircraft. (Galbreath via Taylor)



33rd FG F-84C landing at Las Vegas AFB (now called Nellis) after a gunnery mission. Notice how far all three landing gear struts have extended. (Col. W. Thomas, via Taylor)



# F-84D

The F-84D was the first really significant variant in the F-84 program. The F-84D was powered by the much more powerful Allison J35-A-17D engine rated at 5000 lbs. static thrust. With the extra thrust available, Republic could afford to strengthen the basic F-84 airframe. The wing skin was increased in thickness from .072 to .081. The main landing gear struts, compressed by hydraulic means in the F-84B and C, were now compressed mechanically through a tie rod between the wing and the gear door closure piston. Both the Air Force and the Navy had settled on a standardized set of radio consoles and these were added to the F-84D cockpit layout. Lightweight fuel cells, saving 120 lbs., were installed. The nose armament bay door was changed from a fully removable panel to a forward-hinging door. The ejection seat, which had been installed in the earlier variants but had never been cleared for use, was finally declared safe. Additionally, the pitot tube was moved from the leading edge of the vertical fin, to the airflow splitter inside the nose intake ring.

Beginning in November 1948, the first of 154 F-84Ds began arriving. However, two months prior to the first F-84D delivery, the Air Force almost cancelled the entire F-84 program. The Air Force had conducted a study into the F-84 program and all the problems associated with it. It was "officially" found that neither the F-84B nor the F-84C could "satisfactorily meet any phase of the missions of the major commands!" The Air Force could have cancelled the entire program at that point. However, it was pointed out that production of the F-84D had progressed so far that almost half of the money spent on the F-84D program could not be retrieved.

The Air Force called for a major test program to conclude whether the F-84D would be a more cost-effective aircraft than the previous variants. The tests would also determine whether the F-84 was a better fighter aircraft than the Lockheed F-80. The tests were conducted between 2 February and 6 March 1949 and the results were conclusive. The F-84D was a far better aircraft than either of the earlier F-84 variants, and the F-84D was also head and shoulders above the F-80. The F-84D was faster, had a greater range, better acceleration, a higher rate of climb, and could carry a much greater payload than the Shooting Star. The F-84 would become the standard Air Force fighter-bomber in the early to mid-1950s.

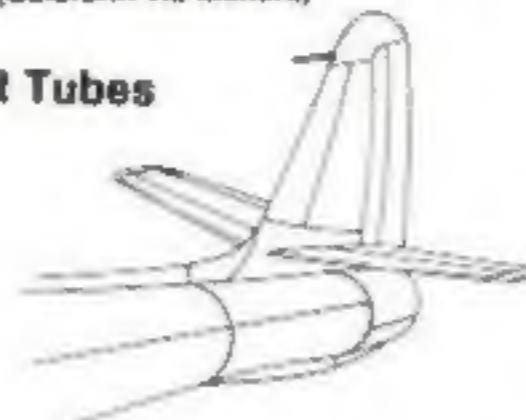
The reliability and maintainability of the F-84D was so greatly enhanced over previous variants that many remained in service with Air National Guard units through 1957, while all previous F-84 types were retired by 1953. Additional improvements were made throughout the production life of the F-84D. These included a canopy remover to facilitate fast exit from the aircraft, winterizing the fuel system, and the addition of fixed, but jettisonable, bomb racks in place of the retractable racks found on earlier models. A serious stability problem was corrected when small triangular fins were added to the wingtip tanks. After a series of crashes resulting from wing failure, it had been found that the tip tanks actually began to twist on the wingtip when speeds exceeded 0.70 Mach. With the addition of the small fins, the F-84D, and all other models retrofitted with the tip tank fins, could now be flown to maximum speed — with or without tip tanks.

The F-84D was the first of its type to be deployed to bases outside the United States. F-84B and C models were not assigned to overseas bases due to the extremely short maintenance life of the early versions of the J35 engine — only 40 hours between overhauls! Several F-84Ds were in the inventory of the 27th Fighter Escort Group when it deployed to Korea in the Winter of 1950. In 1952, with fighter-bomber losses in Korea mounting at an alarming rate, the Air Force sent a further 102 F-84Ds to the war zone to replenish the depleted units. Most of these aircraft went to the 136th Fighter-Bomber Group. The last F-84Ds were phased out of Air National Guard service in late 1957. The cost of the F-84D program was \$212,241.00 plus engine, electronics and armament.



A Yellow and Black trimmed F-84D from the 79th FBSq, 20th FGp based at Langley AFB, Virginia. Of note are the dual 5 inch rockets mounted on each underwing rocket launch stub. (Galbraith via Menard)

Pitot Tubes



Wingtip Tanks



F-84D



Fin

"KIT'N", an F-84D from the 128th FBSq, Georgia Air National Guard, seen at Dobbins AFB, Georgia in 1955. Note that "KIT'N" has had the braced canopy retrofitted. Air National Guard aircraft did not carry 'USAF' on the upper right and lower left wings, substituting the letters 'ANG' and the last three digits of the serial number in their place. (118th FBWg via Taylor)

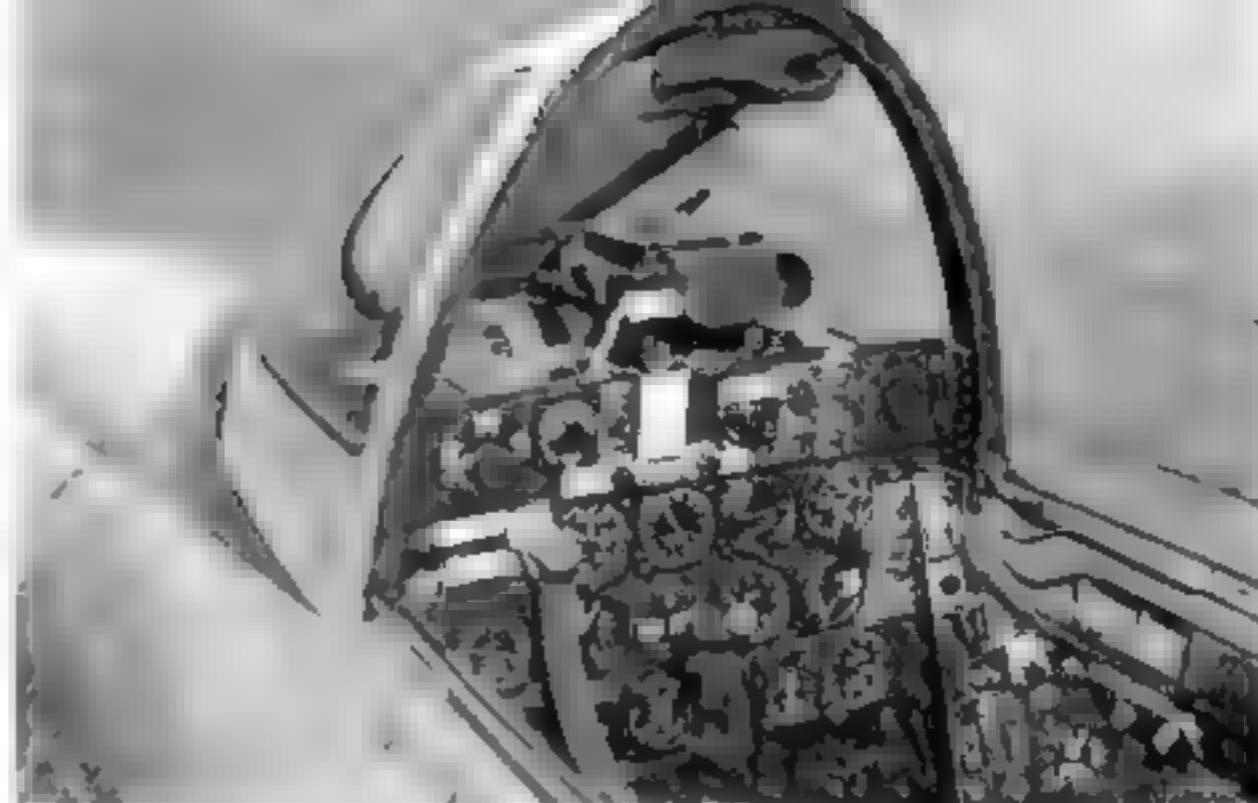


# F-84E

With the F-84E the Thunderjet finally lived up to the specifications originally drawn up in the 1944 General Operational Requirements. The F-84E was powered by the Allison J35-A-17D engine the same as in the F-84D. But that is where the resemblance ended. An additional 12 inches was added to the fuselage length in the cockpit area for the pilot's comfort. Retractable Jet Assisted Take-Off (JATO) racks were added to the underside of the rear fuselage. The use of JATO meant that the gross takeoff weight could be raised to 24,000 lbs. Internal fuel capacity was increased and the underwing bomb pylons were modified to handle an additional pair of 230 gallon drop tanks in place of bombs. Combat range, with a pair of 1000 lb. bombs and using a JATO takeoff, was extended to 1485 miles. Service ceiling was 43,220 feet. Top speed of a production Thunderjet exceeded 600 mph for the first time, with the F-84E being able to do an honest 613 mph. A Sperry A-1B radar gunsight rounded out the new F-84E package.

First flight of the F-84E was achieved on 18 May 1949, with USAF accepting the first production aircraft six days later. Problems still dogged the F-84 program, although the airframe itself was generally acceptable. The Sperry A-1B radar gunsight proved unreliable and F-84E production was held up until the new Sperry A-1C gunsight became available. The J35 engine was susceptible to all types of problems and by April 1950 only 50% of the aircraft were flyable due to engine parts shortages. Some F-84Es in the Far East Air Force were later fitted with in-flight refueling probes in the tip tank noses which increased the range almost infinitely.

The last of 843 F-84Es rolled off the assembly line in July 1951. The US Air Force accepted 743 and sent the remaining 100 aircraft to various NATO countries, mainly France. Even with the many changes incorporated in the F-84E, the cost remained exactly the same as the F-84D. F-84Es were involved in many firsts, including the first nonstop jet flight across the Atlantic and the first in-flight refueling of operational combat aircraft. The last F-84Es were phased out of ANG/AFRS service in mid-1959.



F-84E cockpit. As with other early USAF jet fighter aircraft, the F-84 cockpit was black with interior green fuselage walls and floor. US fighter aircraft went to an interior grey paint scheme in 1953. (USAF)

With the much more powerful J35-A-17D engine and JATO bottles attached to the underside of the rear fuselage, the F-84E was capable of lifting some prodigious loads. This aircraft is from the Eglin AFB Air Proving Ground and is carrying a pair of 1200 lb. Tiny Tim rockets, plus eight batteries of three 5 inch rockets. (USAF)





Colonel George Laven's 525th FBSq F-84E when he commanded the 86th FGp at Neubürg AB, Germany. Colonel Laven changed the 86th Group markings from those seen below to the checkerboard seen here. The tail colors were the Group colors — Red and White. The tip tanks and nose ring were done in the squadron colors — Blue and White for the 526th FBSq, Red and White for the 526th, and Black and Yellow for the 527th. (Laven via Menard)

This F-84E is from the 36th FBGp at Furstenfeldbruck AB, Germany. The tall stripes are Blue and White for the 36th Group, while the tip tanks are Yellow and Black for the 53rd FBSq. In the days of the Cold War, the 36th Group was known to brag that they were "only eight minutes away from the Reds!" (U.S. Army)

### Jato Installation



A Red and White striped F-84E from the 86th FGp. Compare these markings with those above. The armorer on the wing is loading the ammo cans that feed the starboard wingroot .50 calibre machine gun. (Jourdan)





An F-84E-5 from the 27th FGp at Bergstrom AFB, Texas in early 1950. Although the F-84E was fully capable of carrying a load such as this, it was seldom done since range would be cut to virtually nothing. The normal combat load was four 5 inch rockets and a pair of 500 lb. bombs, or a pair of 1000 lb bombs. (Menard)

The F-84E was the backbone of the Air National Guard fighter-bomber force well into the late 1950s. This Ohio Air Guard aircraft was recently transferred from the Iowa ANG as it still carries the color flash from its former unit. Note the fine mesh screen over the intake to keep foreign matter out of the jet intake during ground runups. The smallest amount of dirt was hazardous to the health of the temperamental J35. (AFM)



# F-84G

The F-84E was the last straight wing variant in the F-84 series. Next on the production line was to be the swept wing F-84F series. In fact, the last fiscal 49 F-84E serial 49-2430, was completed with swept wing and tail surfaces and served as the prototype for the F-84F series. However extensive problems with the swept wing F-84F coupled with the Air Force's need for a fighter-bomber aircraft with the capability of delivering nuclear weapons led to a contract for Republic to build a straight wing interim fighter capable of carrying nuclear weapons — the F-84G. Eventually more of these interim Thunderjets would be built than any other variant. The final production tally would be 3,025, with 789 going to the US Air Force and the remainder going to nations with mutual defense pacts with the United States.

The F-84G differed from the other variants by using the 5600-lb thrust Allison J35-A-29 engine. This increased the top speed to 622 mph and unrefueled range jumped to 2000 miles. It was the first fighter designed to carry and deliver nuclear weapons. It was also the first fighter aircraft designed to include an in-flight refueling receptacle making it compatible with the newly developed Boeing Flying Boom in-flight refueling system. An autopilot was incorporated to take further advantage of the increase in range. It was on the F-84G that the fairing bracing on the canopy first appeared. These canopies were later retrofitted to all previous F-84 models.

In August 1951, the first production aircraft began arriving. The 31st Fighter Escort Wing at Turner AFB, Georgia, was the first unit to go operational in the F-84G. Deliveries to the 5th Air Force in Korea began in the Summer of 1952. Operational tests of the extremely long legs of the F-84G began in July 1952 when fifty-eight 31st FEW aircraft were flown from Turner AFB to Misawa AB, Japan. The code name was Operation Fox Peter One and the aircraft refueled with KB-29P tankers enroute. In October 1952, Fox Peter Two sent the 27th FEW back to the Far East from Bergstrom AFB, Texas. And in August 1953, under Operation Longstride, the 508th FEW flew from Turner AFB to Bentwaters RAF base in England, and the 31st FEW flew from Turner to Sidi-Simane AB in French Morocco, refueling over the Atlantic from SAC KC-97 tankers. The US Air Force was demonstrating to the entire world that they could deliver nuclear devastation on a tactical level, to any part of the world at any time.

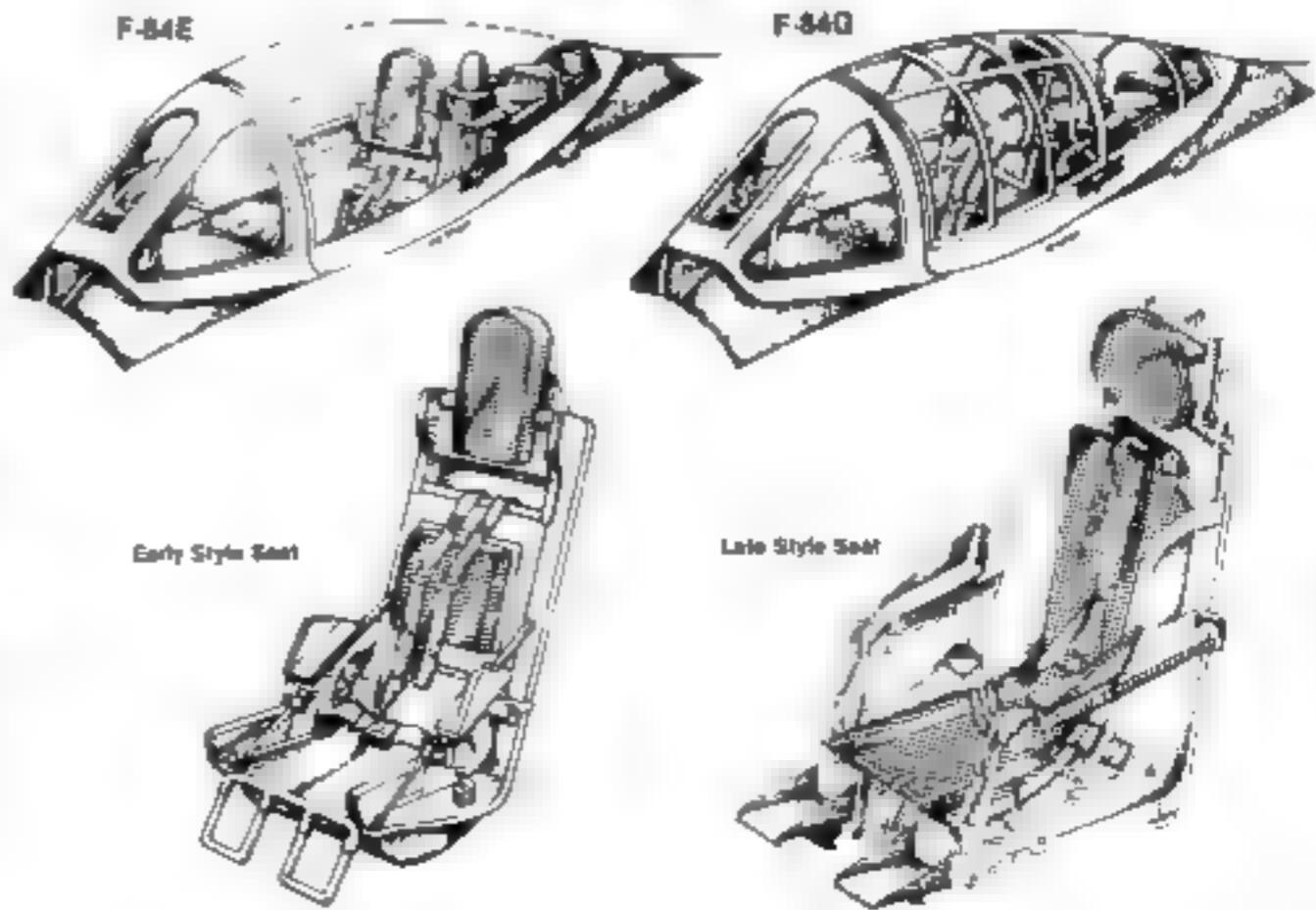
The F-84G saw service with no less than a dozen air forces throughout the free world, not counting the US Air Force. Only three European nations did not equip with the F-84G — Great Britain, West Germany and Spain. Two of those nations would instead equip with the North American F-86 Sabre while the third, West Germany, would have both the F-86 and its swept wing cousin the F-84F Thunderstreak. Oddly, no F-84Gs saw service with the US Air National Guard.

The flyaway cost of the F-84G was as follows: airframe-\$237,247.00; engine (installed)-\$41,488.00; electronics-\$4,761.00; armament-\$37,433.00. Considering the initial contract cost and all the improvements made throughout the aircraft, the F-84G was a bargain. In the end, the straight-wing F-84s are remembered as the "Mechanics Nightmare", the "Lead Sled" Hog and Super Hog referring to the Thunderjet's ability to leave the ground. It will also be remembered as the supreme fighter-bomber aircraft of its day. An aircraft that could deliver either a tactical or nuclear bomb to a target almost anywhere in the world — and then bring the pilot home again.



A 79th FB Sq F-84G leaves the runway at Wethersfield RAF Base in June 1952. The F-84G introduced the new braced canopy, which was eventually retrofitted to all previous models. (USAF via Menard)

## Canopy Development





F-84  
Early

Dive Brake Doors

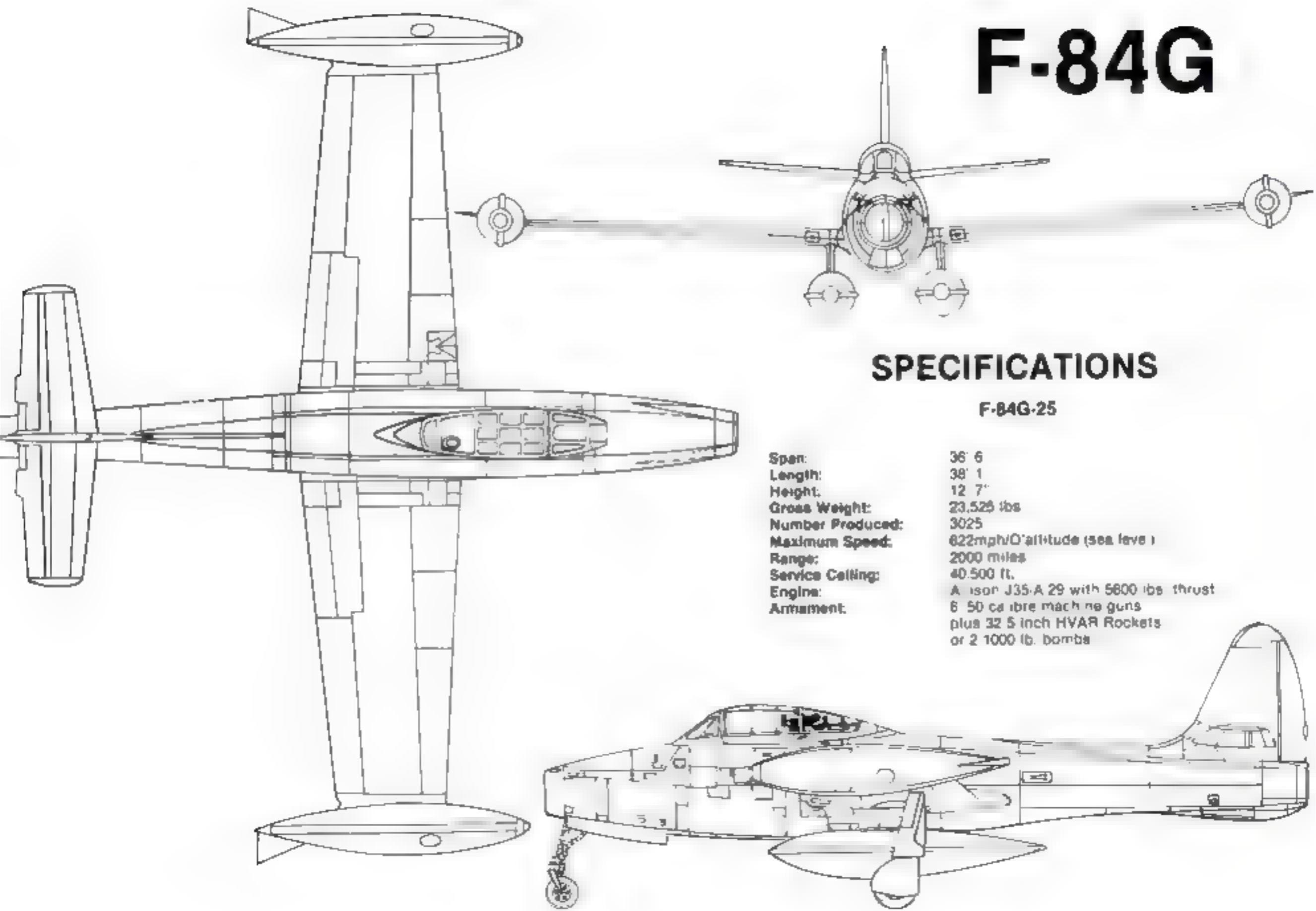
F-84G  
Late

In the latter part of 1953, Strategic Air Command again demonstrated the extremely long legs that inflight refueling provided its fighter arm by sending the 508th Strategic Fighter Wing from its home base at Turner AFB, to Bentwaters RAF Base in Great Britain. The aircraft were refueled inflight by KC-97 tanker aircraft, new to the SAC tanker fleet. (USAF via Menard)

A pair of 31st Fighter Escort Wing F-84Gs begin their takeoff roll at Nouasseur AB, French Morocco. In August 1953, during Operation Longstride, the 31st FEWg flew from Turner AFB, Georgia, to Morocco — nonstop, refueling in the air from Air Force KB-29s along the way. The operation demonstrated to the entire world, and the Soviets in particular, that SAC could protect its bomber force flying to targets anywhere in the world. (USAF)



# F-84G



## SPECIFICATIONS

### F-84G-25

Span: 36' 6"  
Length: 38' 1"  
Height: 12' 7"  
Gross Weight: 23,525 lbs  
Number Produced: 3025  
Maximum Speed: 622 mph/O altitude (sea level)  
Range: 2000 miles  
Service Ceiling: 40,500 ft.  
Engine: Allison J35-A 29 with 5600 lbs thrust  
Armament: 6 .50 calibre machine guns  
plus 32 5 inch HVAR Rockets  
or 2 1000 lb. bombs

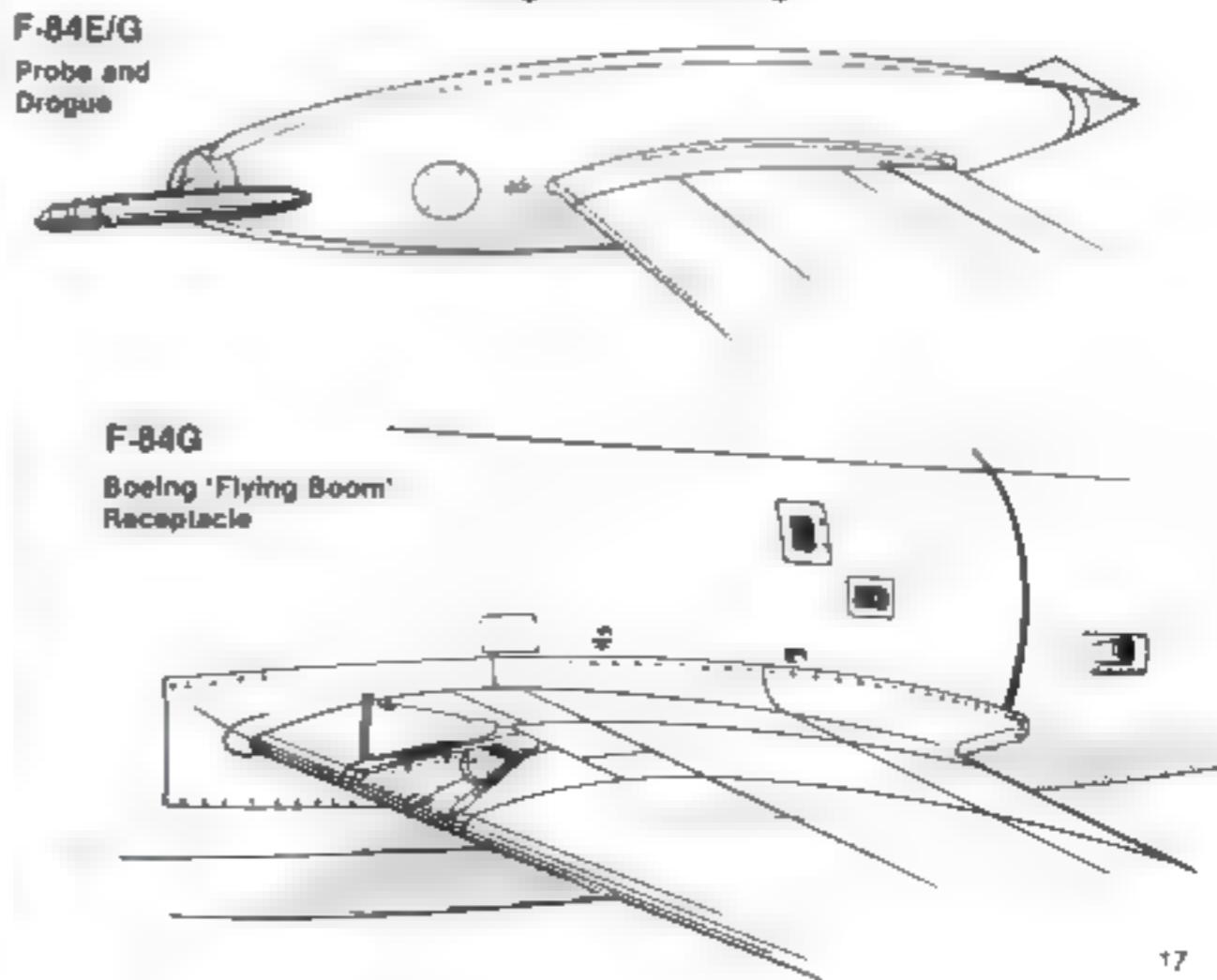


A 421st Air Refueling Squadron KB-29P tanker refuels a 49th FBGp F-84G carrying a practice Mark 7 nuclear bomb. Even though the F-84G was designed to accept the Boeing 'flying boom' method of inflight refueling, the aircraft of the Far East Air Force continued to use the probe and drogue method due to the fact that no flying boom tanker aircraft were available in the Far East. The F-84G was the first fighter aircraft designed to carry nuclear weapons. (USAF via Menard)

The Blue and White striped aircraft of Major Don Gravenstine, CO of the 492nd FBSq at Chaumont AB, France in 1952. Note the pierced steel plank (psp) ramp, which was unusual at a European airbase. (Gravenstine via Menard)



### Inflight Refuelling





The US Air Force's official aerobatic team was The Thunderbirds. The team flew F-84Gs from their beginning in 1953, until they were phased out in favor of the swept-wing F-84F in 1958. (Olmsted)



Captain Jack Broughton was with the Thunderbirds in 1955 and 1956, flying both Wing and Lead. He would eventually wind up flying another Thunderbird aircraft in the Vietnam War — the F-105 Thunderchief — and write a book about his war experiences entitled "Thud Ridge". (USAF)



What better way for the Thunderbirds to travel on the ground than in brand new 1955 Ford Thunderbirds. The team was, from left to right - Captain Jack Broughton/Leader, Major 'Mac' McCormick/Solo, Captain Burl Spalding/Left Wing, Captain Bill Creech/Right Wing, and Lt. Ed Palmgren/Slot. (USAF)



Colonel Dave Schilling, commanding the 31st FEWg, taxis in at Yokota after completion of a grueling 10,985 mile flight from Turner AFB, Georgia. Note the various tactical radio antennas added to Colonel Schilling's aircraft for the flight. (USAF via Menard)



Colonel Donald J M Blakeslee's aircraft when he commanded the 27th FEWg during Fox Peter Two. The aircraft was marked with all three of the squadron colors, Red, Yellow, and Blue, on the nose, tail, fuselage bands, tip tanks, and dive brake door.



Although there were many Air Force aerobatic teams during the early 1950s, the Thunderbirds were the only one officially recognized by the Air Force. However the Skyblazers, a team from the 36th FBGp in Europe, received their share of recognition, touring throughout the Western World, including the United States as seen here at a show in Detroit during 1952. (Wm. J. Balogh)



A flight of 20th FBGp F-84Gs over the English countryside near Wethersfield. The lightning bolts and tail stripes are Medium Blue for the 55th FBSq. (USAF via Menard)



EF-84G serial 51-1225, was converted to test the Zero Length Launch concept. The bird was launched from a Matador Missile launcher by a solid fuel booster rocket, which was then jettisoned and the aircraft would proceed to its target using its normal J35 powerplant. The idea was to place these aircraft in camouflaged wooded areas around the Soviet Union, armed with nuclear weapons, and await a possible attack. Without a runway, the ZELL F-84Gs could be hidden in hundreds of places, making them virtually impossible to knock out. The concept is quite similar to that of todays Cruise Missile, only these were manned aircraft. (Menard)



One of only two SouthEast Asia Treaty Organization (SEATO) countries to receive the F-84G was Thailand, most of the other SEATO nations opted for variants of the F-86 Sabre. This aircraft is seen at Don Muang Airport, near Bangkok, in June 1957 (Glimsled)



(Above) Late in the service life of the Danish Air Force F-84Gs, they were camouflaged in the standard NATO colors of Dark Green and Ocean Grey, over Medium Sea Grey undersurfaces — all RAF colors. See the color illustration for details of this No. 730 Eskadrille aircraft. (Menard)



The second SEATO nation to receive the F-84G was Nationalist China. Other than US Air Force F-84Gs in Korea, the Chinese Thunderjets were the only others involved in combat. The Formosan-based Nationalist Chinese Air Force engaged the Red Chinese Air Force over the Formosan Strait throughout the mid-1950s. The above aircraft is seen at Clark AB, The Philippines, while attending a gunnery meet for members of SEATO. (Olmsted)

The end of the line for the straight-wing F-84 was the Arizona junk pile. Most of the aircraft in this pile are from the Ohio Air Guard, although some ex-Air Force aircraft can be seen on the bottom row. (Olsen)



# F-84F Thunderstreak

With the tremendous success of the swept-wing North American F-86 Sabre Republic's design team, again led by Alexander Kartveli, began planning a swept-wing fighter of their own. Conceived in late 1949, a standard F-84E fuselage (49-2430) was mated to a pair of wings swept back at a 40 degree angle. The horizontal and vertical tail surfaces were also swept back. The remainder of the new aircraft, actually about 60% of the total airframe, retained its straight-wing heritage.

Under the designation YF-96A Thunderstreak, the prototype rolled out of the Farmingdale factory in late May 1950. It had taken only 187 days to construct. The swept wing was all new, as was the swept back tail surfaces. The canopy was mildly changed by the addition of a V-shaped windscreens to help cut the air. The aircraft was designated the YF-96A and, owing to its greater speed over the straight-wing Thunderjet, it was named the Thunderstreak. Unfortunately the airframe and engine designs would allow a top speed of only 658 mph, far short of the Air Force requirements. The aircraft made its first flight on 3 June 1950.



F-84G



YF-96A



F-84F



The YF-96A in flight over Edwards AFB during the summer of 1950. The YF-96A had a standard F-84E fuselage but had swept wing and tail surfaces. Note the V-shaped windscreen similar to that found on the F-86A Sabre. (AFM)

The first YF-84F on the Edwards AFB ramp in 1952. Note the 6 inch vertical spread throughout the length of the fuselage needed to both accommodate and supply air to the new XJ-65-B-3 engine. The V-shaped windscreen was removed from the YF-84F prototypes in favor of a new flat armored glass windscreen. (Wm. J. Belogh)



Republic wanted to go ahead with further research and eventual F-96A production, much as they had done with the trouble-plagued F-84 series. But the Air Force could not finance such a project due to Congressional budget cuts in defense spending. The Air Force needed all their funds to purchase the proven F-86 Sabrejet, now rolling off North American assembly lines. The swept wing Thunderstreak project would be saved by a very unlikely ally — the North Korean Communists.

On 25 June 1950, North Korean Communist tanks and troops rolled across the 38th parallel into nearly defenseless South Korea. It shocked the entire Free World. The Soviet Union really did want world domination and was willing to use force to obtain its goals. The US Congress immediately began adding funds to various defense budgets.

One of the top priority projects was that of the swept-wing F-96A Thunderstreak. However since it was much easier for the Air Force to obtain money to further develop an existing airframe, in September 1950, the Air Force redesignated the swept wing design from YF-96A Thunderstreak to YF-84F Thunderstreak. A similar decision at North American Aviation resulted in the YF-95A Manned Interceptor becoming the F-86D Sabre.

With the influx of funds for the new project, Republic began looking for ways to increase the aircraft's performance. It was felt that a totally new more powerful engine was needed, rather than further development of the Allison J35. The British Armstrong-Siddeley Sapphire engine, rated at 7200 lbs thrust, was chosen to power the YF-84F. Curtis Wright would license build the engine under the designation J65-W-1. A later version, the J65-B-3, was built by Buick Motor Division of General Motors.

Since the J65 Sapphire was bigger and required more air than the J35, the intake area for the YF-84F was to be enlarged seven inches. Republic carried this seven-inch spread throughout the entire fuselage length. The canopy was changed from a sliding-top bubble style to a full clamshell type that swung upward and back on three hinged arms. In addition, a flat armoured glass windscreens replaced the V-shaped windscreens of the prototypes. A large spinal fairing ran from the new canopy to the vertical tail. The dive brakes were moved from the underside of the fuselage to a large door-type brake on each side of the aft fuselage. Armament remained the same with four M3 .50 calibre machine guns in the upper nose gun deck, and an additional pair mounted in the wing roots.

Two YF-84F pre-production prototypes were built. Each was radically different from the other. YF-84F 51-1344 was built around the J65 engine and incorporated most of the design features that would be found on production aircraft. The No. 2 prototype, serial 51-1345, was built with a fully closed streamlined solid nose with the air intakes mounted in the wing root leading edges. The design was shelved when it was discovered that the wing root air intakes cost many pounds in thrust, which obviously meant a loss in top speed — actually about 20 mph. The design would be revived later in the program for a second version of the F-84F. The No. 1 prototype YF-84F flew with J65 power for the first time on 14 February 1951.

Teething problems with the J65 and production foulups at Republic set the program back many months. These extended delays are what prompted the Air Force to go ahead and purchase the upgraded straight wing interim model (F-84G) to fill their tactical nuclear strike force. Eventually, the J65-W-1 engine was almost totally redesigned to meet F-84F requirements. The new design was the J65-W-3 when built by Curtis Wright, and J65-B-3 when built by Buick. Airframe problems came from a design decision to use heavy forgings in the main spar of the wing. An excellent concept, the problem lay in the fact that only one such forge press was available and it was already in use making B-47 wings, which had a much higher priority than the F-84F. The basic wing structure had to be redesigned to make use of available production tooling.

All of this took time and it wasn't until November 1952 that the first production F-84F Thunderstreak rolled out of Farmingdale. The aircraft, F-84F 1 serial 51-1346, first flew on 22 November 1952. The first 275 aircraft were all powered by the Curtis Wright 7200 lb thrust W-1 powerplant. But all aircraft that followed had either the Wright or Buick J65 engine. Production aircraft began arriving at operational units in early 1953, but large quantities were not produced until late 1953 when engine production finally caught up with airframe production.

Problems within the F-84F continued throughout its career, causing time consuming



An operational F-84F from the 77th FBSq, 20th FBG, at Wethersfield RAF Base in the United Kingdom. Note the radical change in the canopy design over that found on the YF-84F prototypes. Of special note is the special weapons pylon needed for delivery of nuclear weapons. 77th FBSq aircraft were trimmed in Red. (R.L.Ward via Menard)

modifications both on the production line and in the field. The aircraft's longitudinal and lateral control systems were inadequate at high Mach numbers. A stabilator or a moving horizontal tail was the answer. But these would not be available in quantity until 1954. A quick fix was authorized. It involved interconnecting the horizontal stabilizer and the elevators. Called the poor man's flying tail, it was fitted to many production aircraft. After various accidents were traced directly to the poor man's flying tail, Air Force directed that the modification be stopped and removed from all aircraft.

Other problems with the landing gear up-lock system, oversize live hydraulic and electrical emergency systems, and still more problems with the J65 engine, eventually led the Air Force to first ground the entire F-84F fleet, and then suspend deliveries of new aircraft in mid-1954. After inspection of the entire fleet, a new program, called Project RDN, was initiated to check the suitability of the F-84F to fulfill the Air Force mission as laid down in the original General Operational Requirement. In November 1954, the F-84F passed the tests and Republic was once again in the airplane business. All aircraft that had been in storage at Republic during the suspension were delivered by March 1955. Production was further increased when General Motors was given a contract to build F-84Fs at their plant in Kansas City. The GM-built aircraft were identified as F-84F-GKs.

The first unit to go operational with the swept-wing fighter-bomber was the Strategic Air Command's 506th Strategic Fighter Wing at Dow AFB, Maine in January 1954. Why was a fighter-bomber aircraft first assigned to a SAC unit before equipping the Tactical Air Command's fighter-bomber units? The reasons were that SAC needed an escort aircraft with the range to get to Soviet targets, and the speed to mix it up with the very fast MiG aircraft defending the USSR. The F-84F was the only fighter aircraft in the Air Force capable of both. The F-84G Thunderjet had the necessary range but was far too slow. The F-86F Sabre was basically the equivalent of the MiG, but had a short range and no inflight refueling capability. The other fighters available, Lockheed's F-94 Starfire and Northrop's F-89 Scorpion, were both point-defense interceptor aircraft, not long-range escort types.

Tactical Air Command received its first F-84F Thunderstorms on 12 May 1954 when the 405th Fighter Bomber Wing at Langley AFB, Virginia began conversion. Two months later because of engine production delays, the 405th still had less than half its allotted strength of 75 aircraft. Production gradually increased and by June 1955, Air Force had twelve F-84F wings in service, six of which belonged to SAC. With the phase-in of the all-jet B-52 Stratofortress and the simultaneous phase-out of the propeller-driven B-36, SAC found itself without a need for the long range escort fighter. The B-52 could defend itself against the Soviet air defenses. By 1956, the entire SAC F-84F fighter force had been turned over to TAC. TAC continued to use the F-84F until the Thunderstreak was phased out in favor of the supersonic North American F-100 Super Sabre. The last aircraft on the active Air Force inventory was released to the Air National Guard on 10 January 1958.

NATO began receiving the F-84F in early 1955 when the French Tactical Air Command re-equipped five Escadres with brand new F-84Fs made available to them under the Military Assistance Program (MAP). Belgium was next and received their first aircraft in August 1956, eventually equipping two wings. The Royal Netherlands Air Force converted six squadrons in 1956 with the Italian Air Force doing likewise with three squadrons. And in November 1956, the West German Air Force, or Bundesluftwaffe, received the first F-84Fs which would eventually equip five wings, more than any other NATO Air Force. The first unit to equip was Wallenachule 30, and the pilots had some very familiar names — Krupinski, Steinhoff, Raaij, Barkhorn. Twelve years earlier they had been members of Hitler's Luftwaffe, and some of them had over 200 kills against the Allied Nations. Now they were flying for NATO against the common enemy to the East. On 20 June 1958, Jabo G-31 became the first operational combat F-84F wing in a resurrected Luftwaffe.

F-84Fs in service with NATO were the only ones to see any actual combat. First use of the Thunderstreak in combat came during the Suez Crisis of 1956. France and England allied themselves with Israel against Soviet-backed Egyptian forces. France committed two Escadres of F-84Fs to the fighting. The 1st Escadre took its aircraft to the Israeli air base at Lydda. The 3rd Escadre took its F-84Fs to Akrolini Airbase on Cyprus. When Israeli forces invaded the Suez on 29 October 1956, air support was provided by Israeli and Royal Navy aircraft, plus the French F-84Fs. 1st Escadre pilots destroyed twenty Egyptian Ilyushin IL-28 Badger jet bombers on 1 November. By 8 November, the Egyptian Air Force had been neutralized with the loss of only one F-84F and pilot. The F-84Fs were also involved in the Turkish-Greek clash over Cyprus but results of that air fighting are unknown.

In October 1961, the East Germans attempted to blockade Berlin as had been done in 1948. The US Air Forces in Europe were immediately strengthened and alerted against a possible attempt by the Reds to take West Berlin by military force. Four Air National Guard F-84F wings, among others, were activated for the crisis. When the crisis was defused, the units were returned to their state control — but only on paper. The Air Force retained all the F-84F aircraft, and many of the Guard personnel, to equip three new active Air Force wings — the 12th and 15th Tactical Fighter Wings in the continental US and the 366th TFWg based in Europe. In 1964, the final F-84Fs were phased out of the active Air Force inventory for the second and last time. They were replaced by the premier fighter-bomber aircraft of both the 1960s and the 1970s — the McDonnell-Douglas F-4 Phantom.

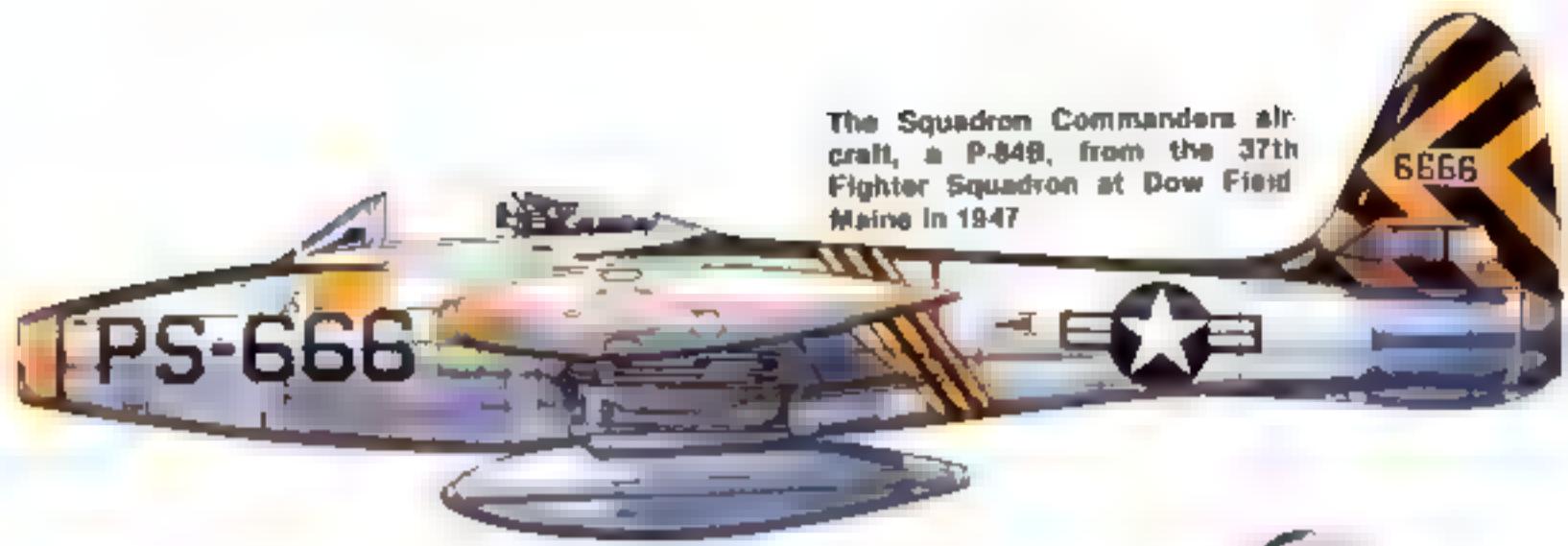
F-84Fs continued to soldier on with the Air National Guard throughout the 1960s. In all, eight squadrons operated the F-84F until late 1971. By that time only one unit was still equipped with the F-84F — the 170th TFSq, Illinois Air Guard, and over 90% of their air

craft were grounded due to structural corrosion. The entire squadron was scrapped and re-equipped with F-4s. It was the last hurrah for the F-84F Thunderstreak although many continued in service with NATO, Turkey continuing their use through 1982.

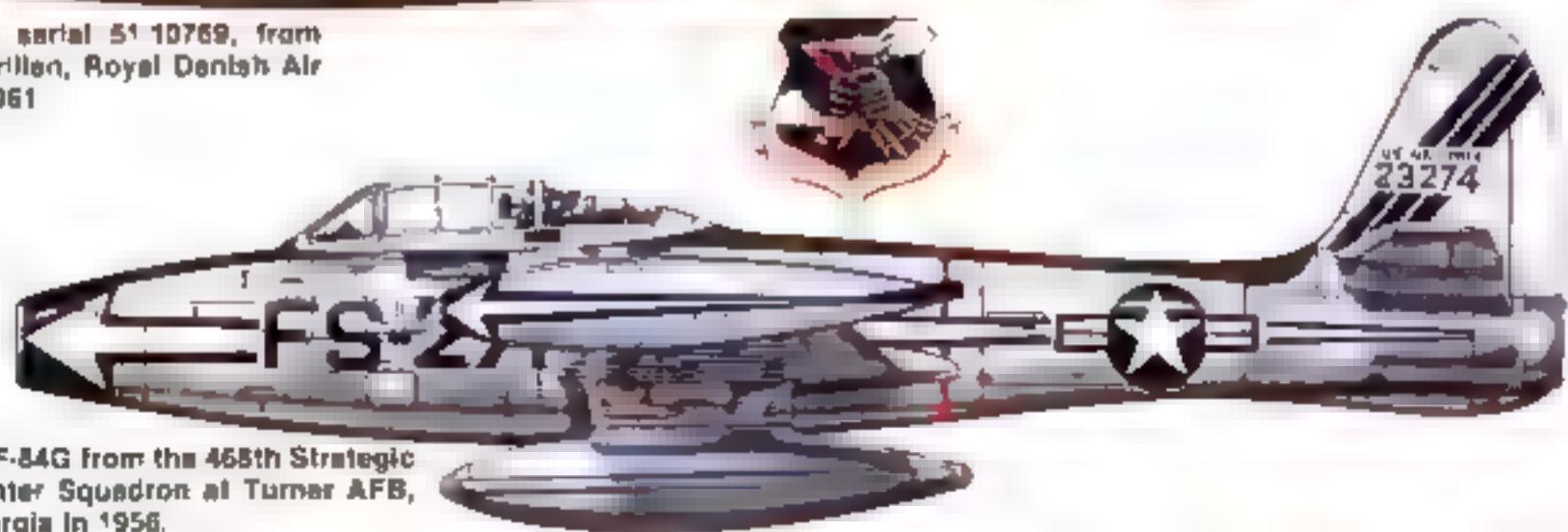
The cost of the F-84F program was enormous when compared to the straight-wing versions. The flyaway cost was over \$1.5 million, over three times the cost of the F-84G. But considering that the aircraft served almost three times as long as any other variant, the F-84F Thunderstreak proved to be cost-effective. All totaled Republic built 2,348 F-84Fs — 1,496 for the US Air Force and the remaining 852 for MAP sales. Production ceased on 14 August 1957.

A Black and White checkertail F-84F from the 401st FBWg based at Alexandria AFB, Louisiana. Compare the standard drop tank pylon on this aircraft with the special store pylon on the 77th FBSq aircraft. The nose ring, wing and stabilizer tips are insignia Blue with White trim. (USAF)

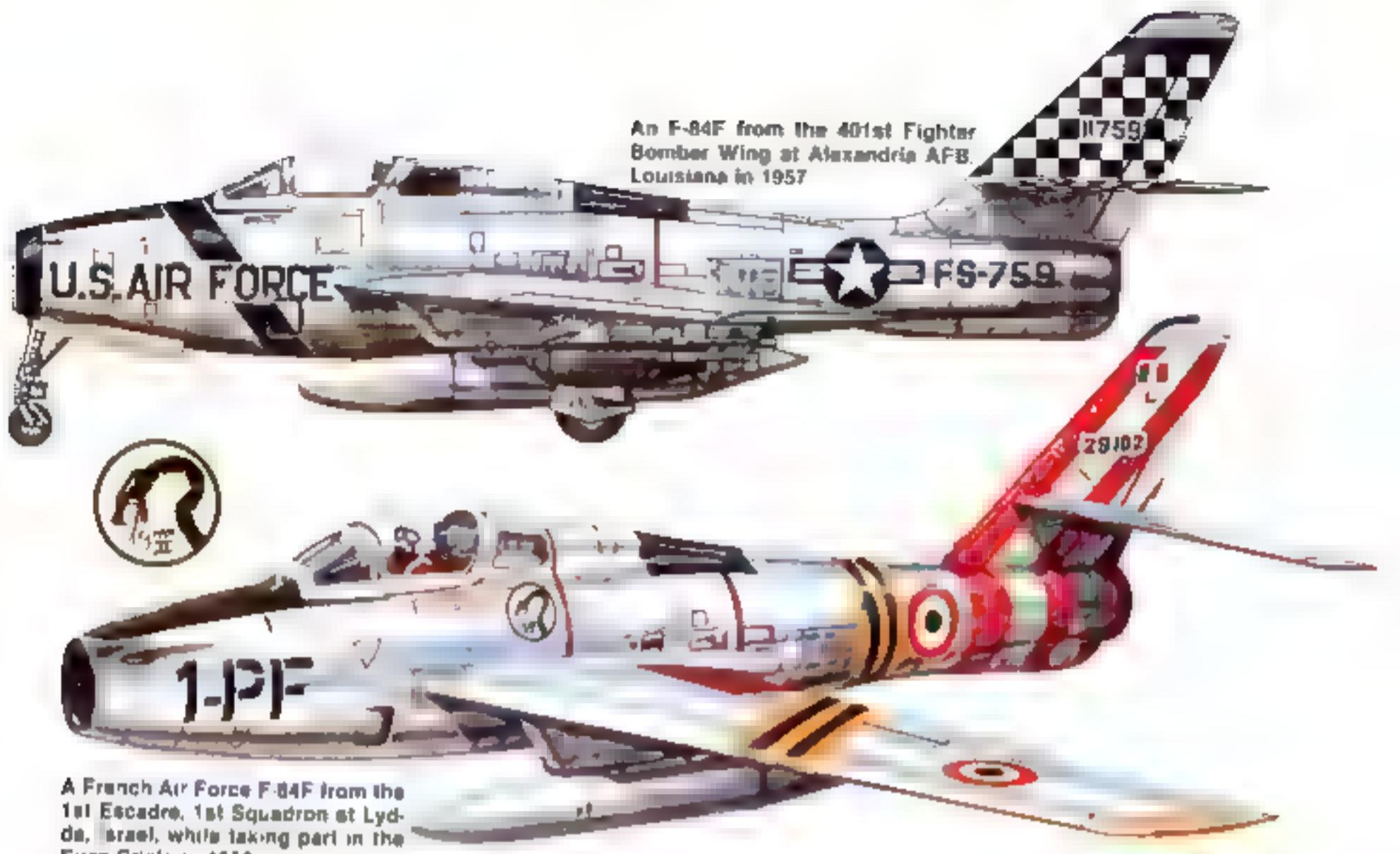




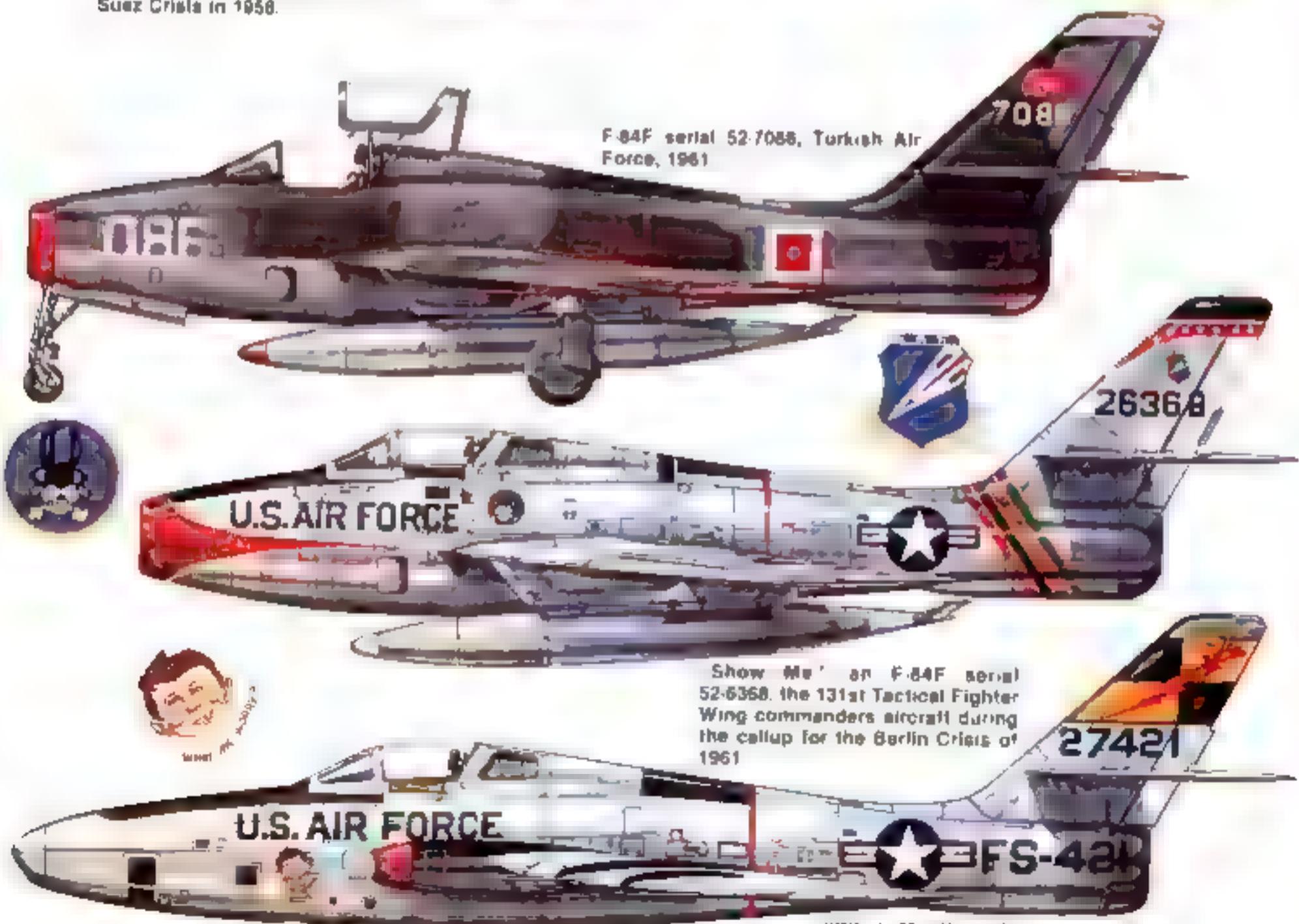
An F-84G, serial 51-10769, from 730 Eskadrillen, Royal Danish Air Force in 1961



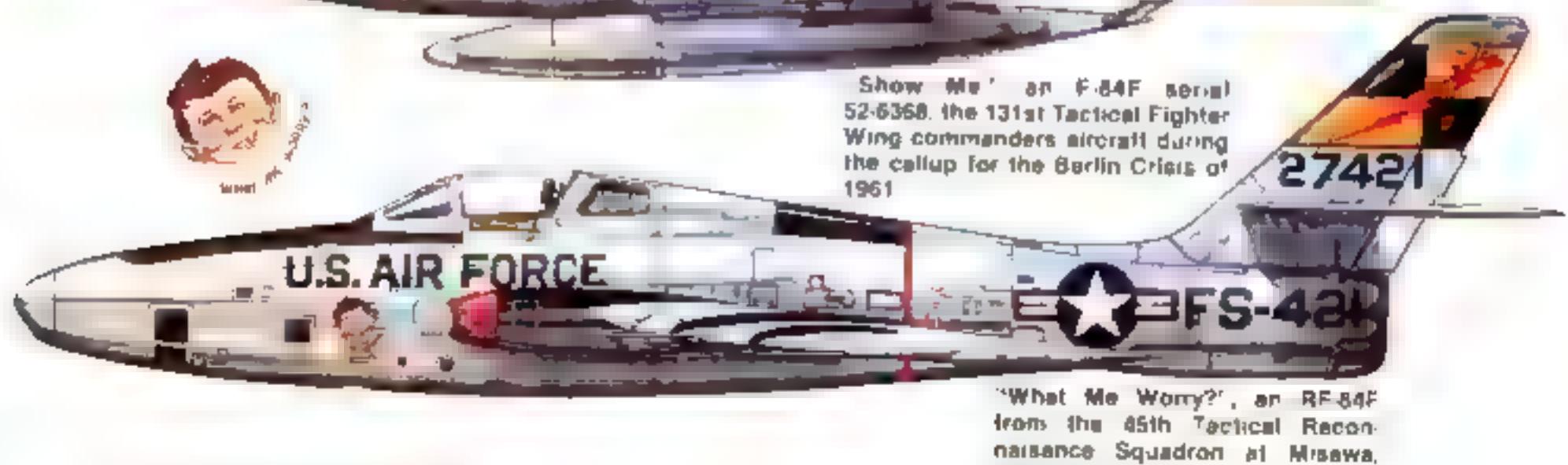
An F-84G from the 465th Strategic Fighter Squadron at Turner AFB, Georgia in 1958.



A French Air Force F-84F from the 1st Escadre, 1st Squadron at Lydda, Israel, while taking part in the Suez Crisis in 1956.



Show Me' an F-84F serial 52-6368, the 131st Tactical Fighter Wing commanders aircraft during the callup for the Berlin Crisis of 1961

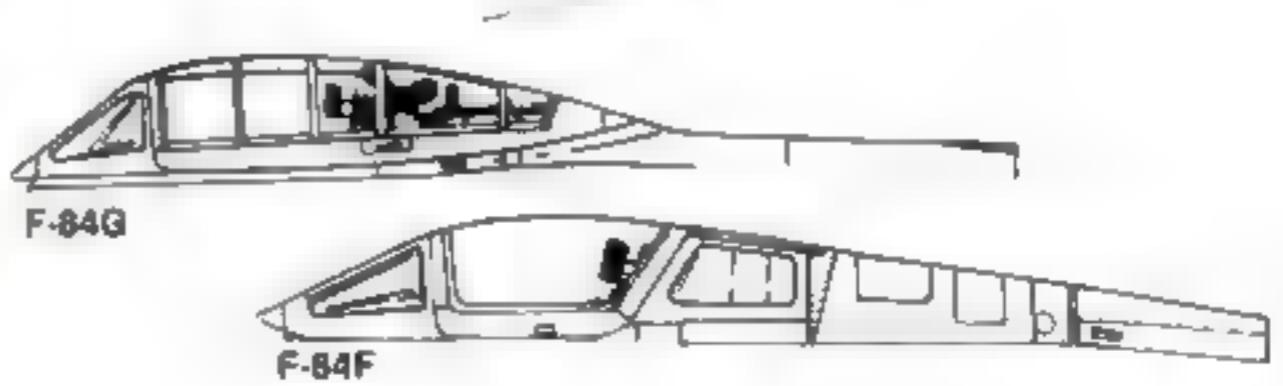
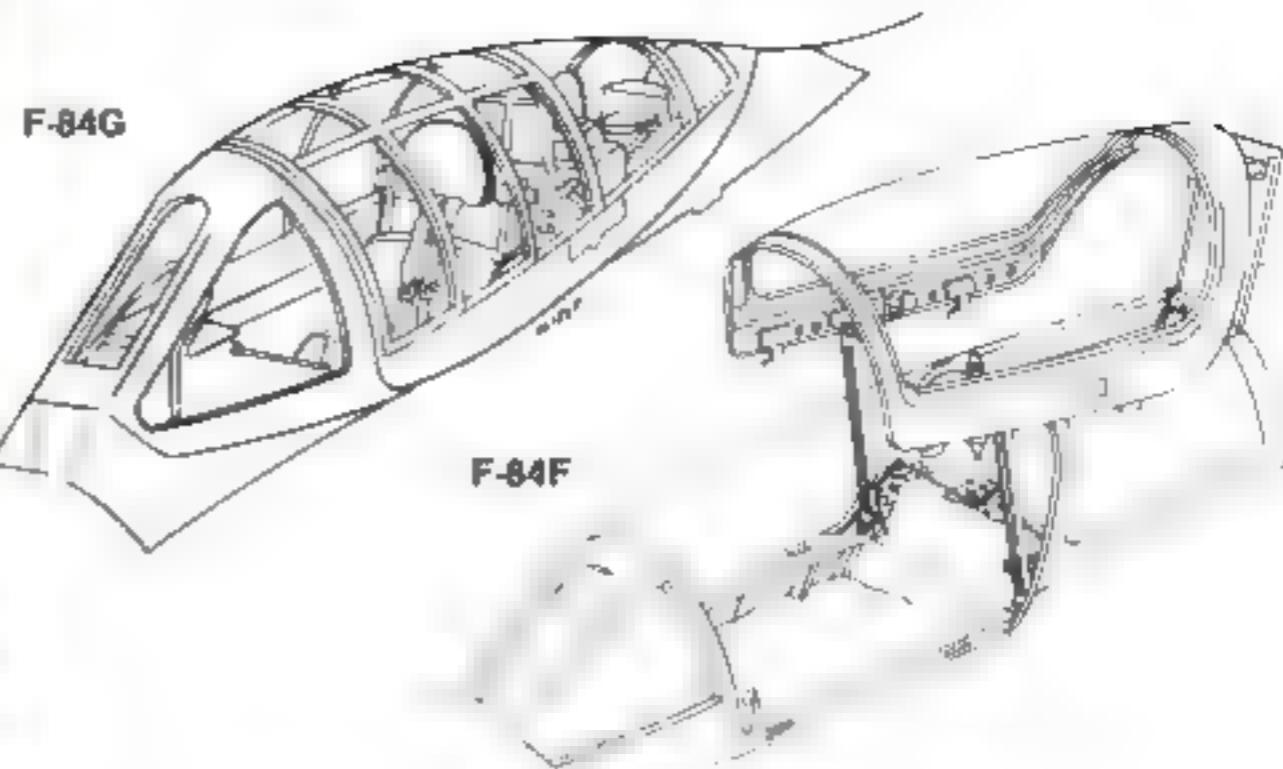


## Canopy Development

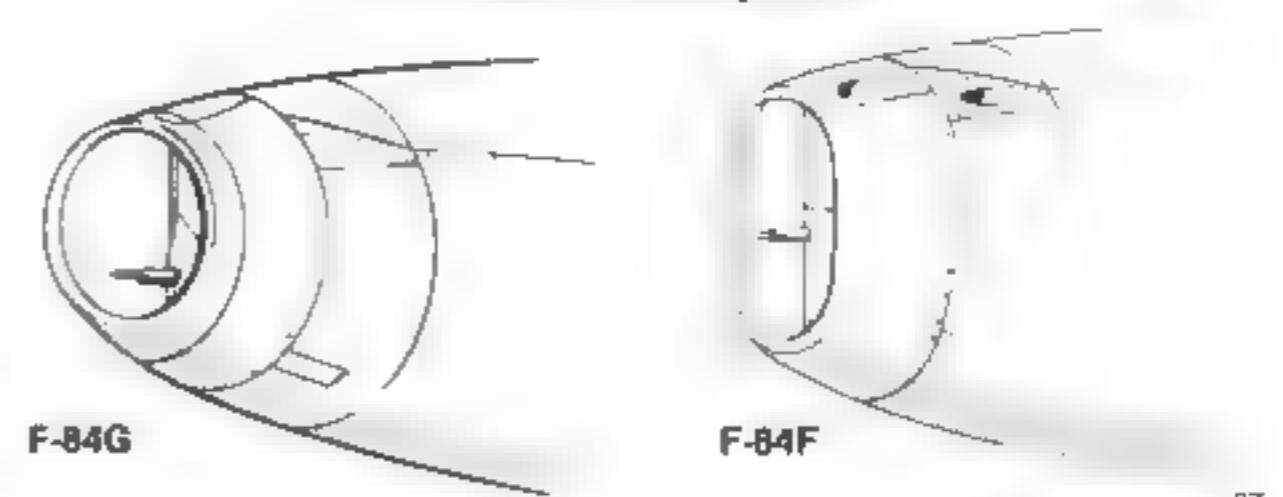


"Misanthrope Mary" from the 405th FBWg, carries a practice Mark 7 nuclear bomb on the port special store pylon. The F-84F used the Low Altitude Bombing System (LABS), to deliver nuclear weapons. This was commonly called 'toss bombing' (USAF)

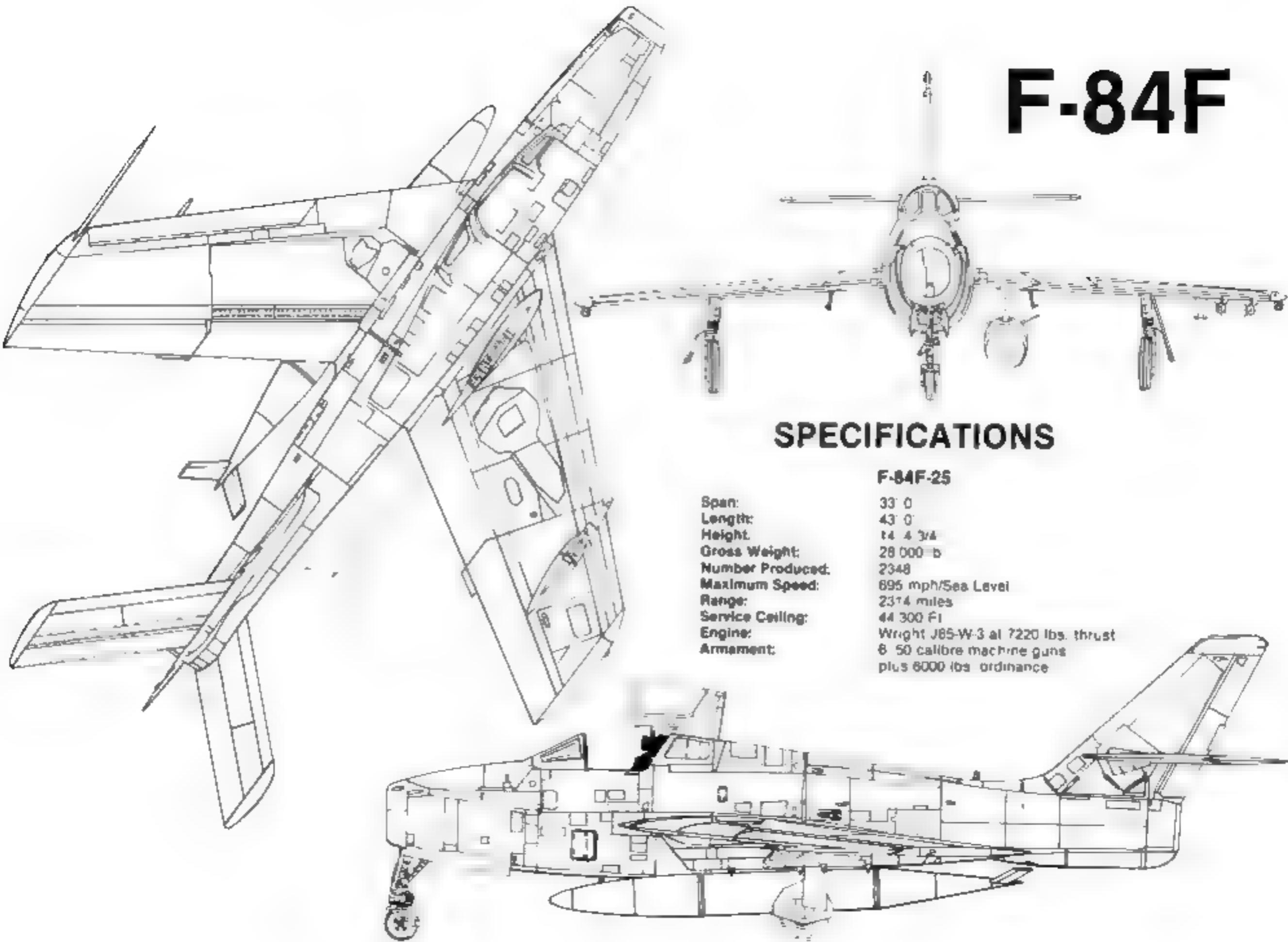
An 81st FBWg F-84F on the ramp at Shepherds Grove RAF Base carrying 200 gallon ferry tanks on the outboard pylons, rarely used in a combat situation. The nose, tail, wingtips, and Flight Leaders stripes on the aft fuselage are Insignia Red for the 78th FBSq. (Pennick)



## Air Intake Development



# F-84F



## SPECIFICATIONS

### F-84F-25

Span: 39' 0"  
Length: 43' 0"  
Height: 14' 4 3/4"  
Gross Weight: 28,000 lbs  
Number Produced: 2348  
Maximum Speed: 695 mph/Sea Level  
Range: 2314 miles  
Service Ceiling: 44,300 ft  
Engine: Wright J65-W-3 at 7220 lbs. thrust  
Armament: 6 .50 calibre machine guns  
plus 6000 lbs. ordnance

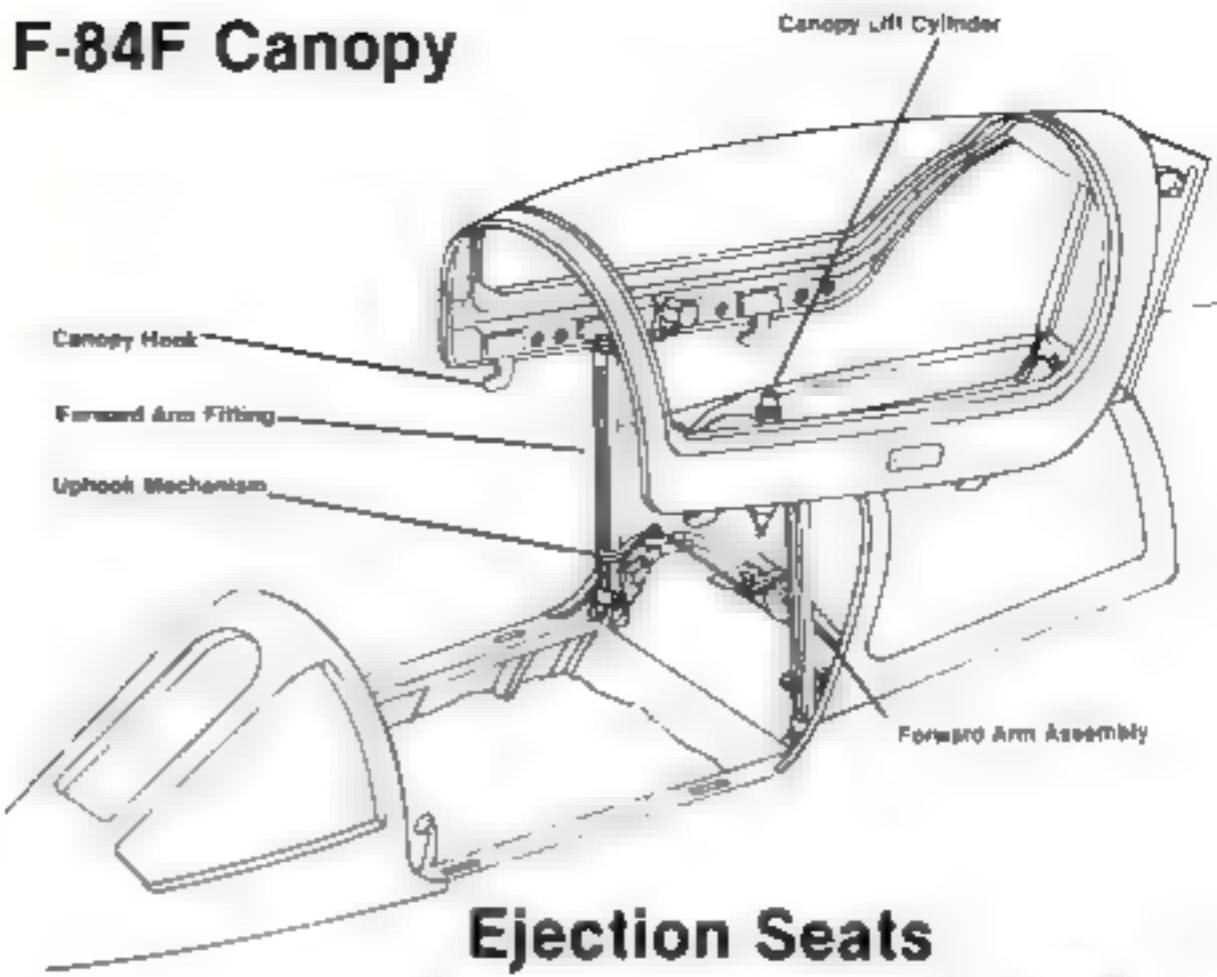


Eight aircraft of the 406th FBWg lined up on the ramp at Langley AFB. The first aircraft, FS-543, set a Transcontinental Speed Record, averaging 652 mph on a flight from Los Angeles to New York City. (USAF via Menard)

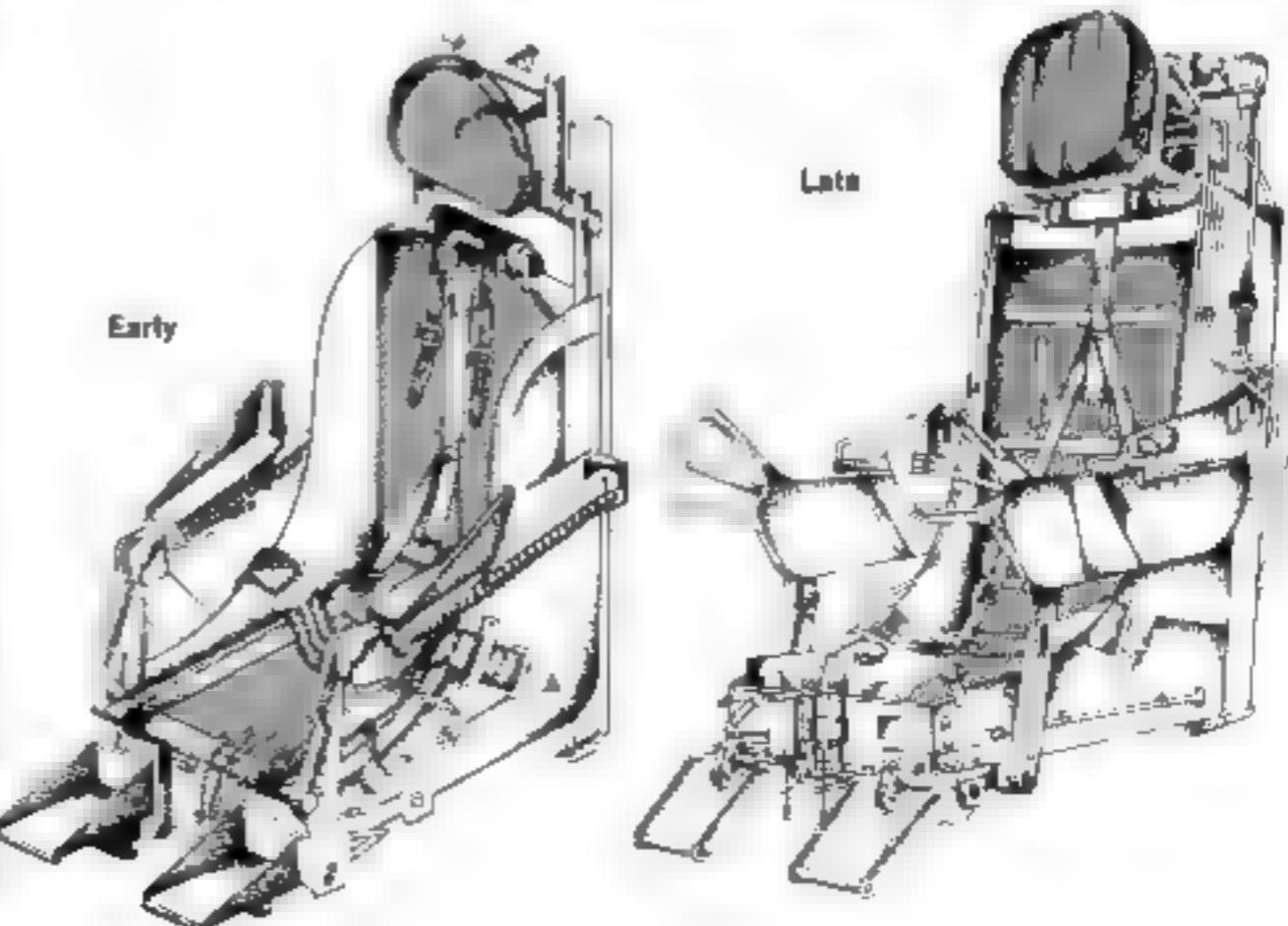
"The Red Falcon 2" was the personal aircraft of Lt Col Bob Ackerty, commanding the 77th FBSq at Wethersfield in 1957. All trim on the nose, tail, alt fuselage, wingtips, and entire canopy frame is insignia Red. (Pennick via Menard)



## F-84F Canopy



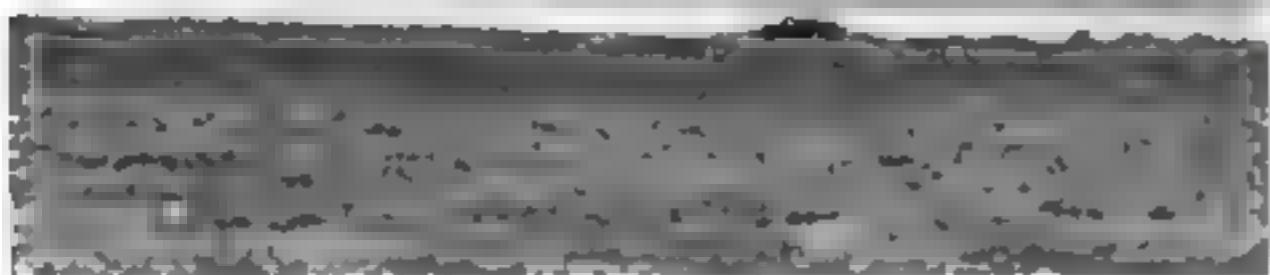
## Ejection Seats





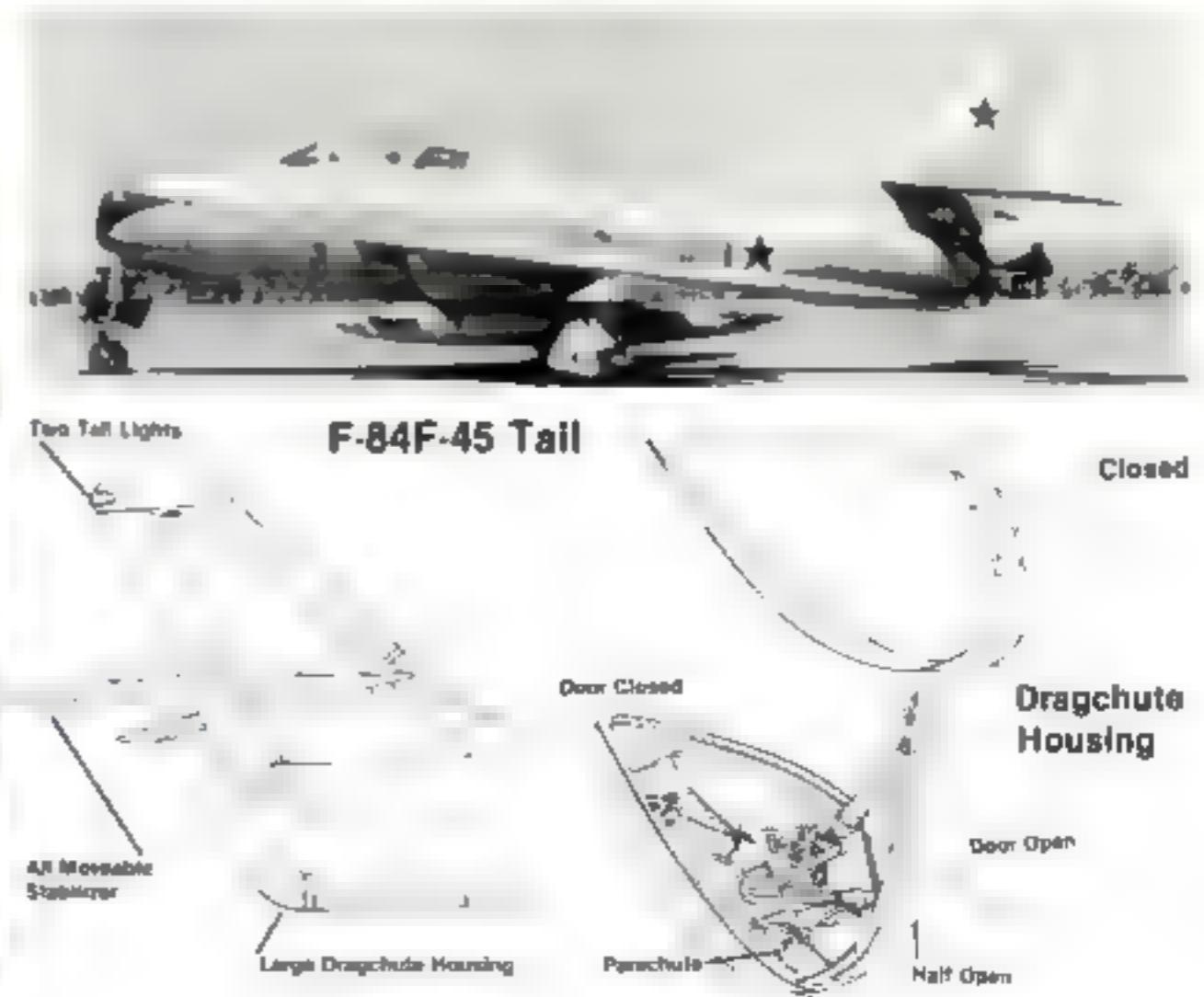
The US Air Force Thunderbirds switched from F-84G straight-wing Thunderjets into new swept-wing F-84F Thunderstreaks during the 1955 season, flying these aircraft until May 1956 at which time they went supersonic in North American F-100C Super Sabres. Note the added TACAN radio antenna under the fuselage. (USAF)

Captain Jack Broughton, Thunderbird Leader, touches down at Andrews AFB in 1955. The Thunderbirds performed 91 shows in the F-84F ending with the Armed Forces Day Show at Bolling Field on 19 May 1956. (USAF)



A pair of 31st SFWg F-84Fs inflight near Turner AFB, Georgia in April 1957. Of note are the great variety of metal shades which indicates the many different alloys used. The tail band and nose gear doors are Insignia Blue with a Yellow number, which is repeated on the anti-glare panel. (USAF via Menard)

F-84Fs fought many battles in the 'real war' as Hollywood used them to simulate MiG-15s in the movies "The Hunters" and "The McConnell Story". The aircraft were painted Light Grey (FS 36440) overall with Red stars. What appears to be a painted nose scallop is actually an air intake cover. (Baker)



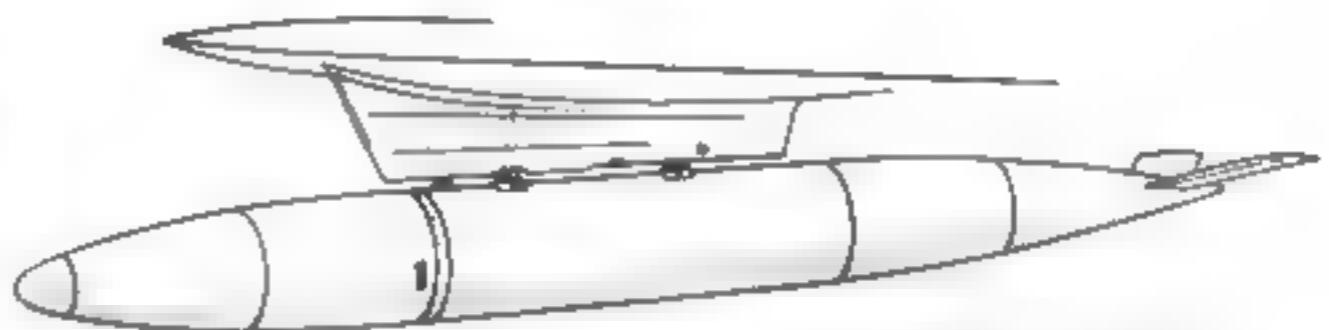


The Missouri Air Guard was called up for the Berlin Crisis in October 1961. The first aircraft is the 131st TFWg wing commander's aircraft as evidenced by the multi-color bands around the rear fuselage. (USAF)

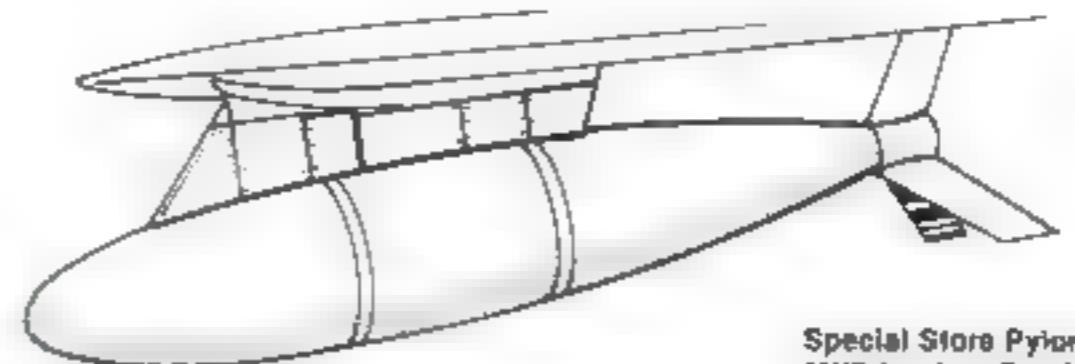
A pair of blue and white striped 390th FBSq 366th FBWg F-84F-45s on the ramp at Alexandria AFB, Louisiana. The -45 model introduced the enlarged parachute housing under the tail. The 390th FBSq emblem under the canopy is a wild boar's head. (USAF via Menard)



## F-84F Pylons



Standard Pylon With  
450 Gallon Droptank

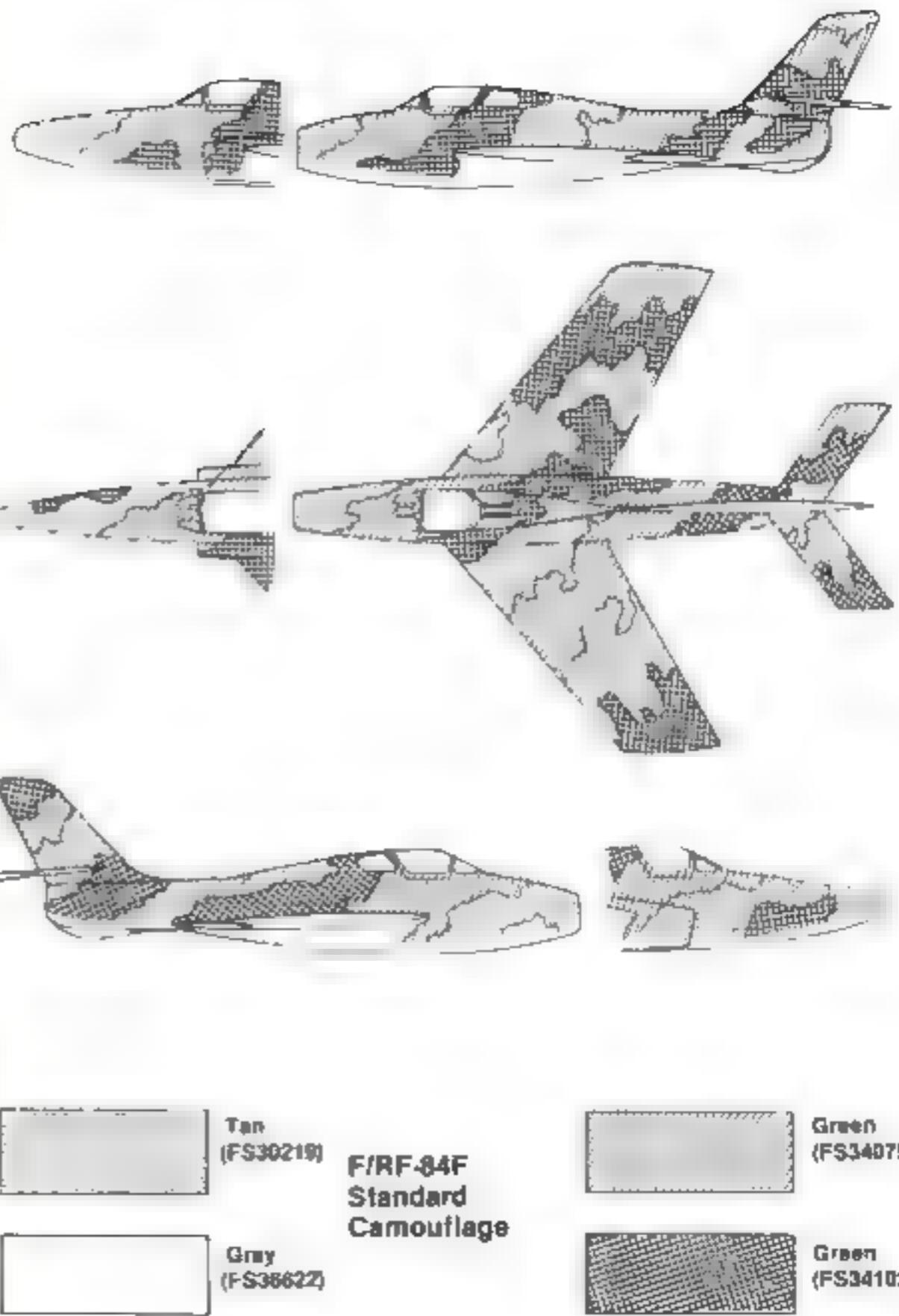


Special Store Pylon With  
MK7 Nuclear Bomb



A finger four formation of Ohio Air Guard F-84Fs during the 1961 Berlin Crisis. Activated Air Guard units were remarked in standard US Air Force markings when recalled into federal service. (AFM)

During the Vietnam War the US Air Force began camouflaging their tactical aircraft in two tones of Green and one Tan over Gray undersurfaces. The F-84Fs, by now all in Air National Guard service, did not escape the paint gun as evidenced by this aircraft from the Texas Air Guard. (Wible via AFM)



Tan  
(FS30219)

**F/RF-84F  
Standard  
Camouflage**

Gray  
(FS36622)

Green  
(FS34079)

Green  
(FS34102)



F-84F serial 52-7086 served with the Turkish Air Force well into the 1970s. In the early 1960s they were camouflaged in typical NATO colors, Ocean Grey and Dark Green on the upper fuselage with Medium Sea Grey undersides. (Brewer)

(Left) The F-84F entered service with the French Air Force in 1955. 1-NI is from the 1st Escadre, 1st Squadron, which was based at Reims. They were retired from service in mid-1960. The nose ring and tail markings are Insignia Red, with Red, White, and Blue rudder stripes. (Jourdan)

The only F-84Fs to actually see combat were those of the French Air Force when they came to the aid of Israel during the 1956 Suez Crisis. The aircraft were marked with Black and Yellow bands as seen on these aircraft from 3/3 'Ardennes' Squadron. Although the bands were intended as quick identification bands, similar to the D-Day stripes of World War II, no general pattern has been observed as to their application. (Jourdan)



# The RF-84F Thunderflash

The need for a high speed photo reconnaissance aircraft was a direct result of experiences gained during the Korean conflict. Korea pointed up the need for a reconnaissance aircraft which would be able to either evade an enemy, or engage and defeat him. The enemy would be the Soviet Union, or one of its allies, and they would be equipped with MiG jet interceptors including the MiG-15 which easily handled all the recon types used in Korea. The Air Force needed a recon aircraft with twice the range, and another 100 mph top speed. The RF-84F would fit these requirements.

The reconnaissance version of the F-84F actually evolved from the No. 2 prototype YF-84F which had the slender pointed nose with the air intakes embedded in the wing roots. Although the concept had been abandoned on a fighter type aircraft because of a loss of thrust from the design of the wing root intakes, the Air Force and Republic Aviation found the design idea for a reconnaissance version. The intakes were enlarged as was the wing itself and the pointed nose gave way to a slender somewhat blunted nose that could house six cameras. In addition, four M3 50 calibre machine-guns were mounted under the outer edge of the wing root intake lip. RF-84F pilots would not be alone unarmed and unarmored. Well, at least they wouldn't be unarmed. Engine, flight control systems, cockpit and canopy, and the landing gear were all shared with the F-84F.

Sharing so many common parts with the fighter-bomber version also meant the RF-84F shared the same problems associated with the entire F-84F program. Wing forging problems led to a four month delay between delivery of the second production aircraft in September 1953 and the third which didn't roll out until January 1954. In April 1954 problems with the J65-W-3 engine set the RF-84F program back a full eighteen months. It wasn't until November 1955, when sufficient quantities of the J65-W-7 engine became available, that RF-84F production resumed. The first unit to become operational was the 363rd Tactical Reconnaissance Wing at Shaw AFB, S. Carolina. In March 1954, actually only one squadron within the 363rd converted to the RF-84F. The remaining two squadrons retained their RF-80Cs, but all personnel from the other two squadrons were rotated through the RF-84F squadron in anticipation of conversion of the entire wing.

The US Military Assistance Program (MAP) also sent RF-84F aircraft to its allies. Naturally, almost all the RF-84Fs went to NATO, this being logically correct as they were also flying the fighter-bomber version of the same aircraft. Germany received two squadrons, while France, The Netherlands, Denmark, Norway, Italy, Greece, and Turkey got one squadron apiece. In the Far East, only Nationalist China opted for the RF-84F, with Japan and South Korea buying RF-86F Sabres which were compatible with their fighter arms equipped with F-86F fighters. In all, 327 RF-84Fs were built for MAP sales to other nations. The US Air Force bought a total of 388 before production ceased in December 1957.

In December 1955, the Strategic Air Command began equipping the 71st Strategic Reconnaissance Wing (Fighter) with RF-84Fs and specially built RF-84Ks. The RF-84K was a modified RF-84F capable of an in-flight hookup with a GRB-36 mother ship. The GRB-36 would carry the paras to RF-84K to the target area, drop him to perform his mission, then retrieve the fighter and bring him home. The project was called Fighter CONveyor or FICON. The RF-84K had a large hydraulic hook attached to the upper part of the nose, directly in front of the windscreen. An added pair of hooks were fitted to the upper portion of the aft fuselage. To enable the RF-84 to clear the B-36 bomb bay, the horizontal stabilators were angled down at 45 degrees from the horizontal. The project had been tested in 1952 with a straight-wing F-84E. In 1953, the original YF-84F prototype serial 49-2430, was modified with the retrieving apparatus and drooping stabilators. It flew for the first time on 30 March 1953, with FICON tests continuing until 1955 when production aircraft began arriving. The 91st SRSq, based at Larson AFB, Washington, received 25 RF-84K FICON aircraft. They were teamed with the GRB-36Ds from the 348th BSq based at Fairchild AFB, Washington.\*

\* For additional information on the FICON program see *Squadron Signal Aircraft in Action No. 42 B-36 In Action*.

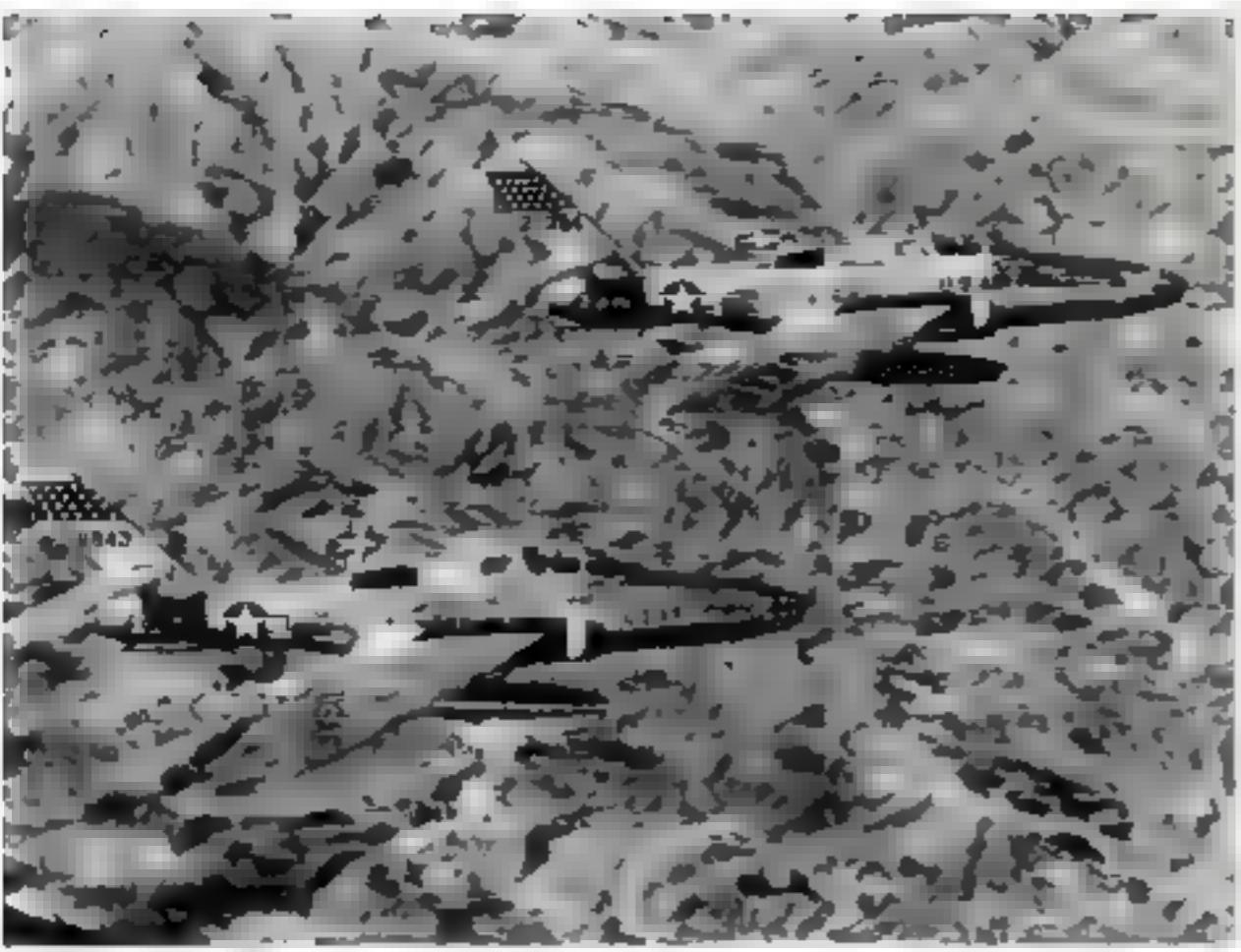
Tactical Air Command replaced its RF-84Fs, including the ones inherited from SAC, in 1958 with McDonnell RF-101 Voodoos. Most of the RF-84F/Ks were sent to Air National Guard units. Seven squadrons were operational in the Guard. When the Berlin Crisis erupted in 1961, the 117th Tactical Reconnaissance Wing, Alabama Air Guard, was activated for possible service in Europe. When the crisis was defused, they and their aircraft were returned to the control of the State of Alabama. Rapid replacement of RF-101Cs in the Air Force by the McDonnell-Douglas RF-4 Phantom brought a supersonic capability to the Air Guard recon effort. The RF-101 Voodoos replaced the RF-84Fs in Guard service. On 26 January 1972, pilots from the 155th Tactical Recon Group, Nebraska Air Guard delivered the last operational RF-84F to the Davis-Monthan aircraft storage and reclamation facility. The cutters torch would write the final chapter to the RF-84F story.



The YRF-84F prototype on the Edwards AFB ramp in July 1952. Note the reinforced F-84G style canopy (deleted on production aircraft), the all-flying tail surfaces, and lack of camera windows. (Belogh)

The YRF-84F prototype flies wing to the No. 2 YF-84F prototype over the California desert in 1951. The camera nose and air intake configuration of the RF-84F were evolved from the No. 2 prototype YF-84F design study. (AFM)





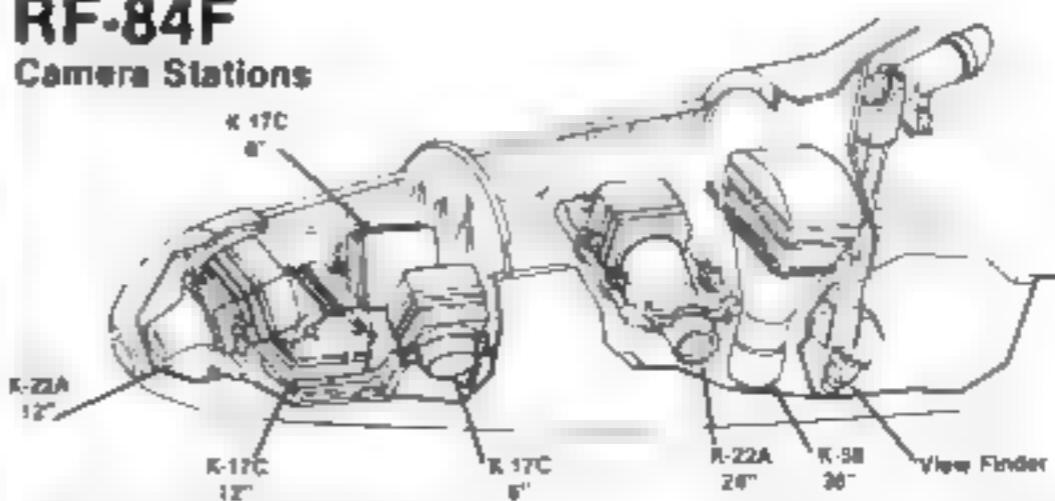
(Above) A Red-striped RF-84F from the 302nd TRSq, 66th TRWg based at Sembach AB, Germany. The tail stripes and wing fences are painted Insignia Red. Wing fences were commonly painted in the squadron color. The Flat Black area on the aft fuselage spine is a fiberglass cover over the radio equipment bay. (Menard)



(Above Left) A pair of 45th TRSq RF-84Fs over the Japanese countryside in the mid-1950s. Based at Misawa AB, Japan, the 45th TRSq RF-84Fs routinely flew recon missions along the North Korean and Red Chinese coasts. (Menard)

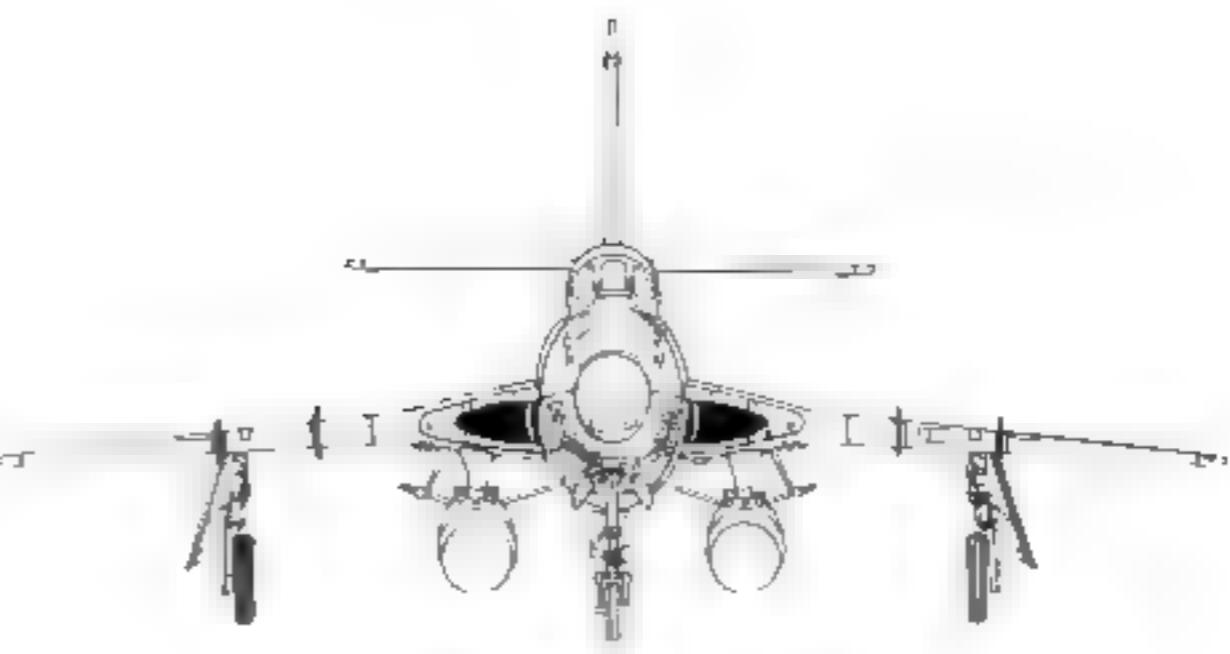
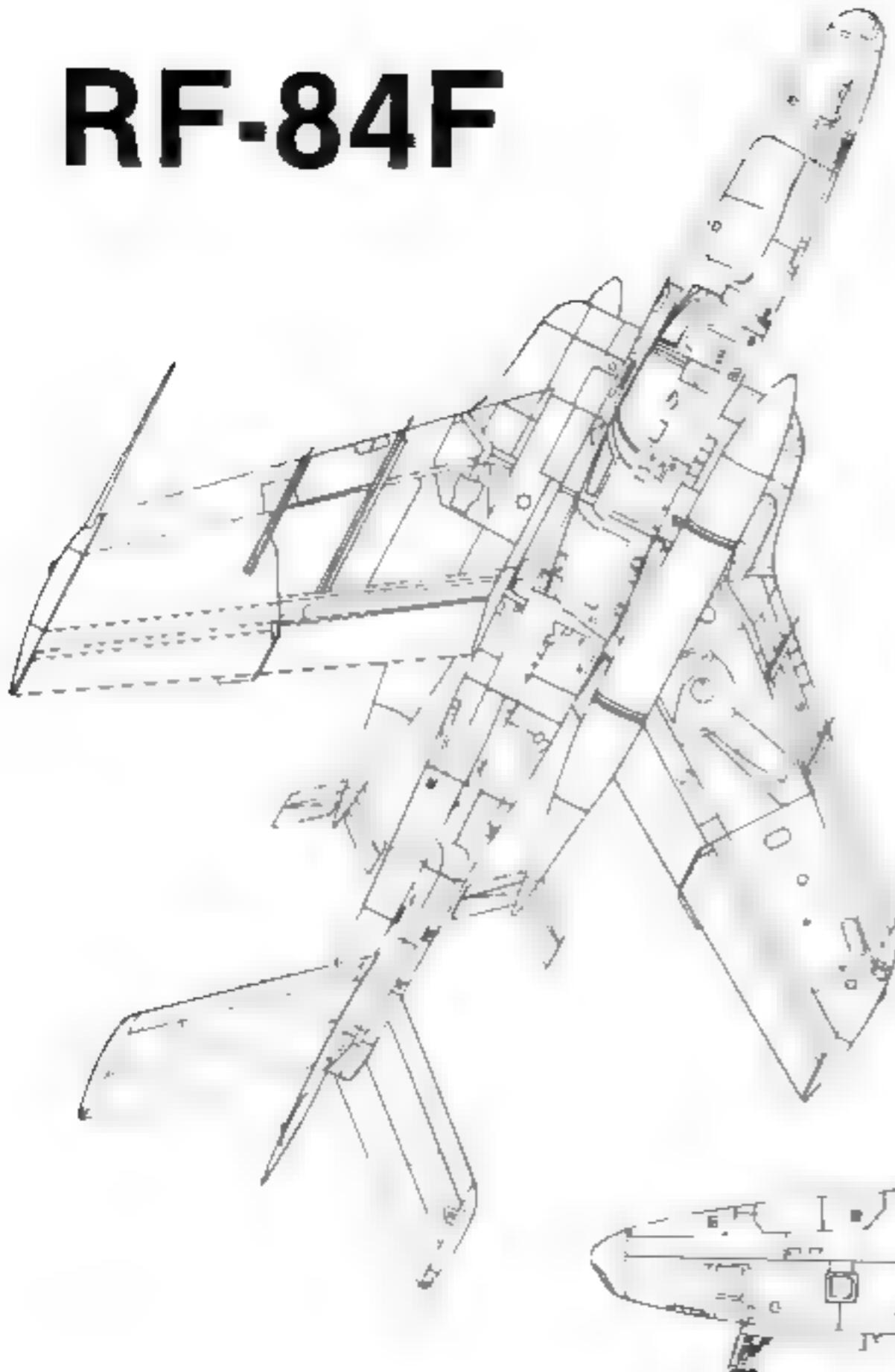
## RF-84F

### Camera Stations



A lineup of 363rd TRWg RF-84Fs on the Shaw AFB ramp in the summer of 1954. At this time only one squadron was equipped with RF-84Fs due to production halts. The remaining two squadrons retained the Lockheed RF-80C. Full production was not resumed until 1955. (Picciani Aircraft Slide)

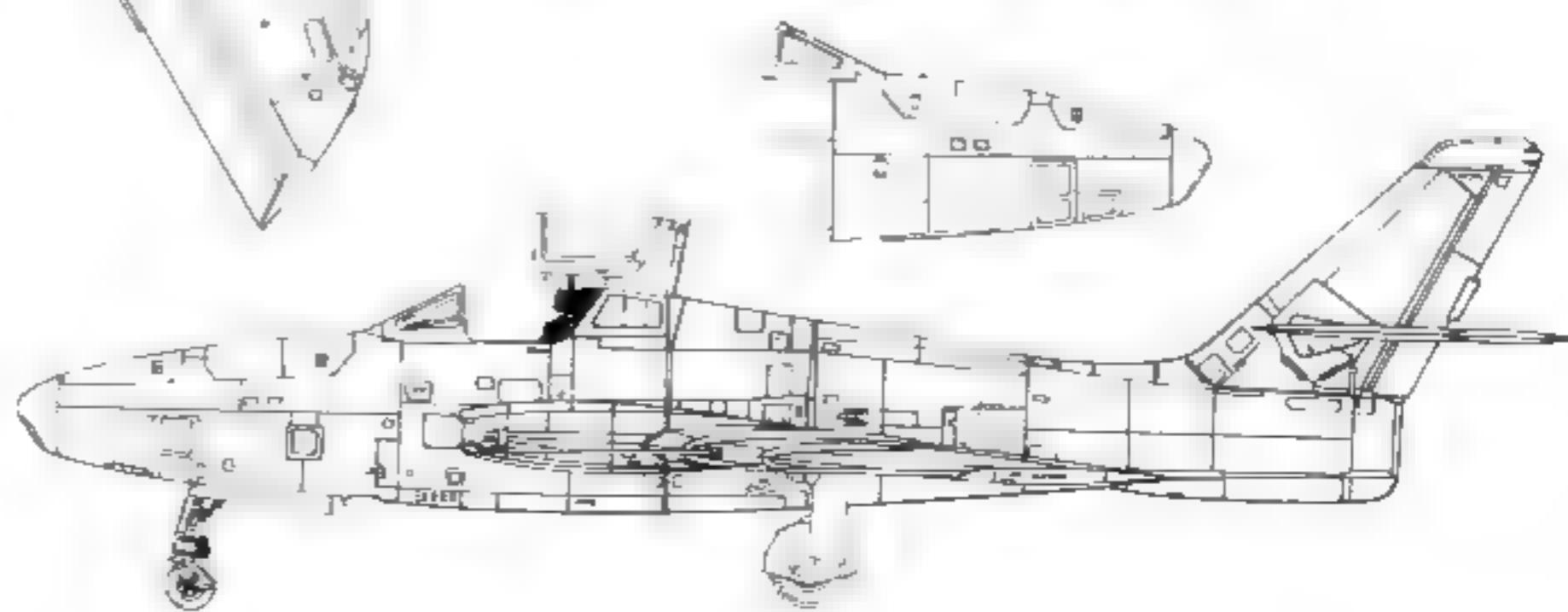
# RF-84F

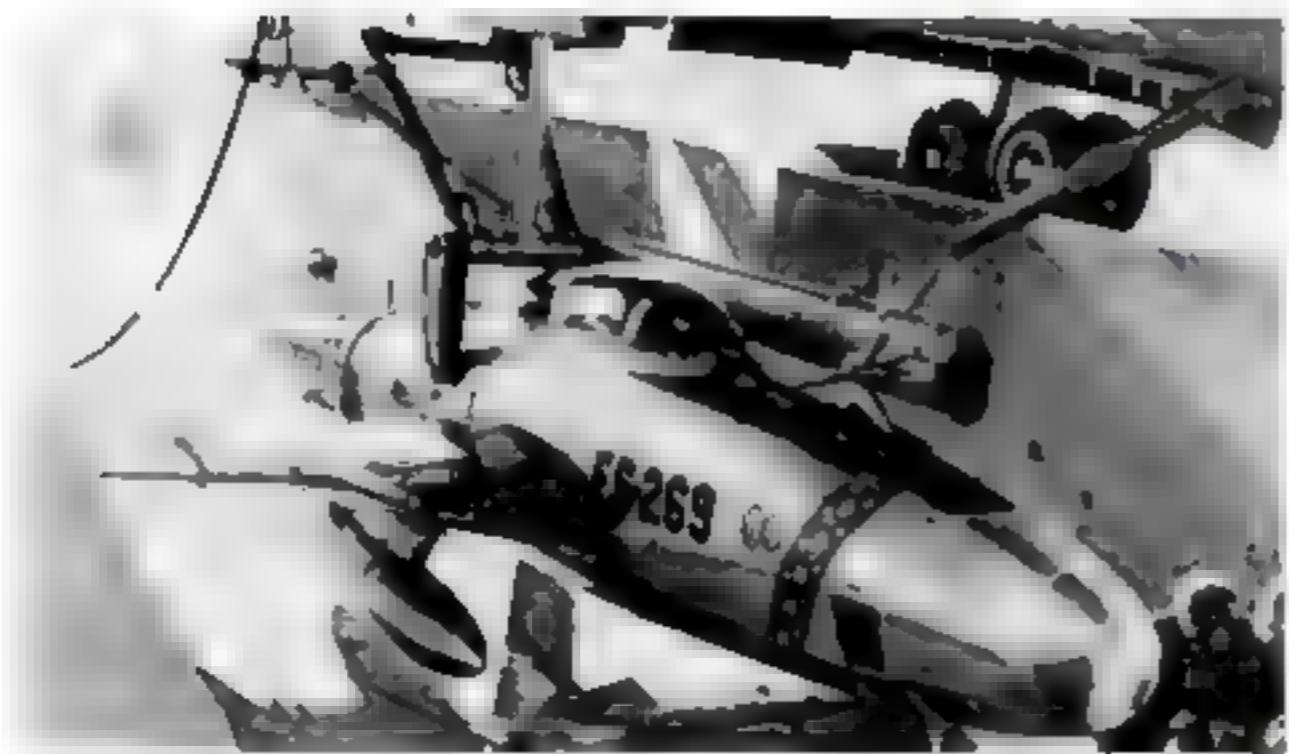


## SPECIFICATIONS

### RF-84F-20

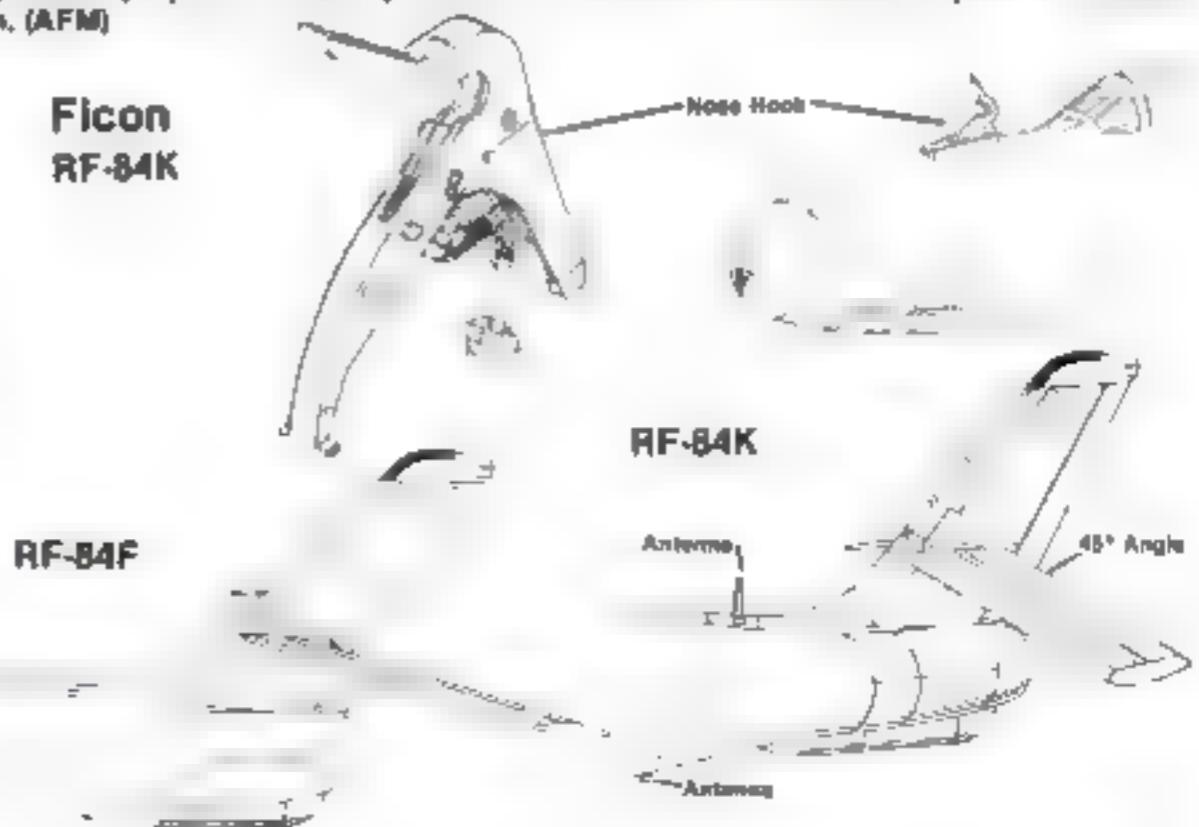
Span:	33' 0"
Length:	47' 0"
Height:	15' 0"
Gross Weight:	25,400 lb
Number Produced:	715
Maximum Speed:	678 mph/Sea Level
Range:	2200 miles
Service Ceiling:	45,600 ft
Engine:	Wright J65-W 7 at 7800 lbs thrust
Armament:	4 50 calibre machine guns





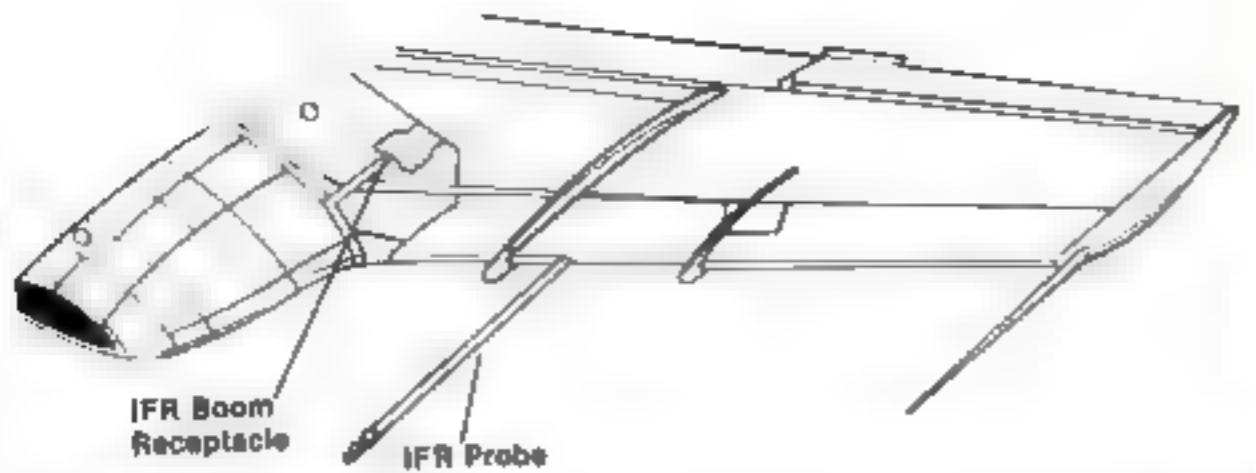
A 91st SRSq RF-84K production FICON aircraft in the pit at Fairchild AFB. The aircraft is being prepared for loading into the open bomb-bay of a B-36 mothership. Another method of loading the RF-84Ks into the B-36 mothership was by backing the GAB-36D onto a large set of ramps which elevated the bomber's fuselage high enough to clear the RF-84K's vertical tail. (AFM)

Some of the first night tests of the Fighter CONveyor (FICON) program used the No. 1 YF-84F prototype aircraft, serial 48-2430. The aircraft was modified with the addition of the FICON pickup hook directly in front of the windscreen. The FICON pickup system had earlier been tested on a straightwing EF-84E. The FICON program was initially developed solely for the purpose of added protection for the B-36 on missions deep into the Soviet Union. (AFM)



An Alabama Air Guard RF-84F, activated during the 1961 Berlin Crisis but not sent overseas, taxis onto its parking spot at Montgomery Airport. (AFM)

## TAC Refueling Probe



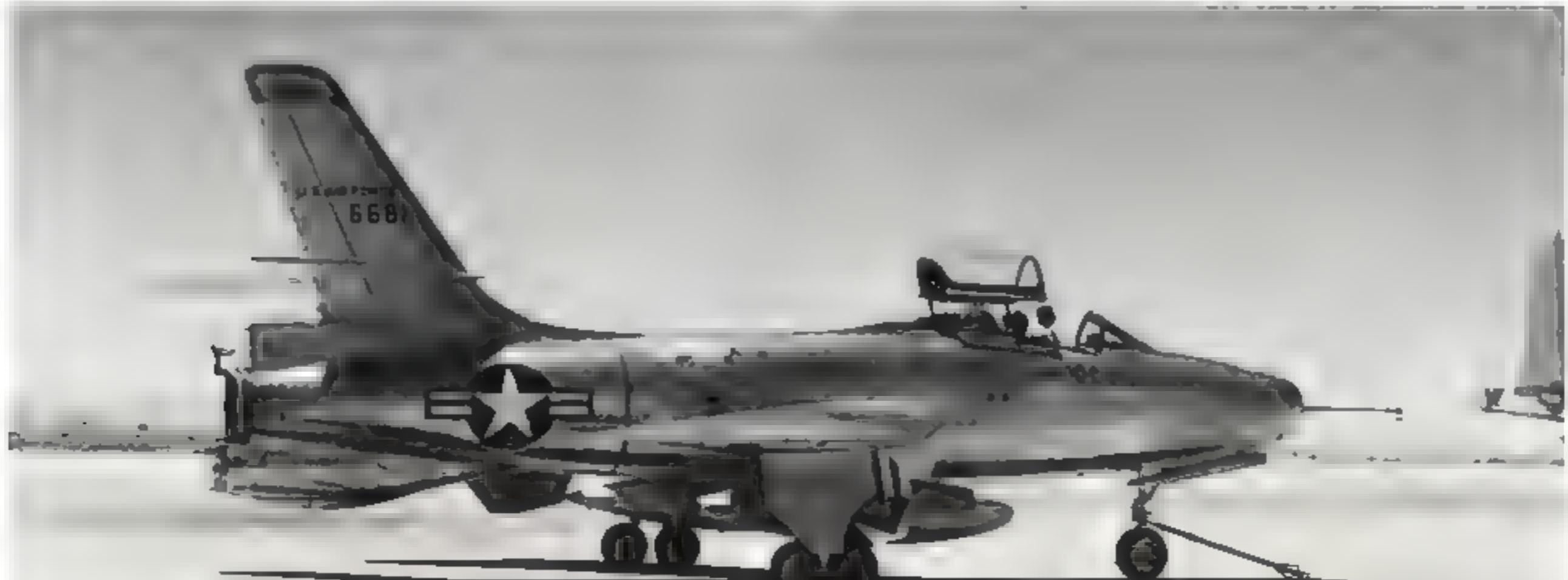
The same Alabama Air Guard RF-84F nine years later at Randolph AFB, Texas. The aircraft now sports the latest in Air Force camouflage schemes and an Air National Guard badge on the tail. Note the inflight refueling probe extending from the leading edge of the left wing making the aircraft compatible with Tactical Air Command probe and drogue inflight refueling equipment. (AFM)





The XF-84H immediately prior to being hoisted onto a concrete pylon at Meadows Field, Bakersfield, California. The XF-84H would be a monument to the men serving at Edwards AFB about six miles from Meadows Field. The XF-84H was the world's fastest propeller-driven aircraft attaining a speed of 670 mph. At that speed, the propeller emitted 900 sonic booms per minute! (Gison via Menard)

The XF-81 was a direct outgrowth of the F-84F program. The aircraft was strictly experimental having many innovations such as an internally mounted KLR 11 RM-9 rocket engine with 6000 lbs of thrust in addition to the J47 turbojet engine normally used. Another radical change was the inverse-taper wing which was wider at the wingtip than at the wingroot. The aircraft was later modified by the addition of an F-86D-style nose and now rests at the Air Force Museum in Dayton, Ohio. (Belogh)



# Korea

When North Korean tanks and troops crossed the 38th parallel into South Korea on 25 June 1950, it began three violent years of conflict during which neither side actually gained anything. Initially, 5th Air Force brass concluded that the main forces present in the Far East were more than sufficient to handle the emergency in Korea. Nothing newer than the Lockheed F-80C Shooting Star would be needed to subdue the fledgling North Korean Air Force, which was comprised of propeller-driven Soviet Yak-7/Yak-9 fighters, some ex-Soviet Bell P-39/P-63 Cobras obtained during World War II under Lend-Lease, and a few Ilyushin IL-10 Stormovik ground attack planes. The North Koreans had no jet aircraft of any kind during the Summer of 1950.

In November 1950, the situation changed—and with it the strategy of 5th Air Force. On 1 November 1950, six swept-wing jet fighters rose from the runway at Antung to intercept a patroling flight of 8th Fighter-Bomber Group F-51D Mustangs. The Soviet MiG-15, best aircraft in the communist arsenal, entered the battle. Seven days later, after many skirmishes with the new Red jets, 5th Air Force requested use of the two best aircraft in the Western World—the North American F-86 Sabre and the Republic F-84 Thunderjet. Sabre exploits in Korea became legend. They fought and slaughtered the MiG force at a ten to one ratio. The Thunderjets went to Korea and did their job with very little fanfare. But within 5th Air Force they became known as the "Champs of the Bomber Force" in Korea.

The Joint Chiefs of Staff notified the Strategic Air Command to prepare the 27th Fighter Escort Group for overseas movement on 8 November 1950; on the same day, the 4th Fighter Interceptor Group was alerted to prepare their Sabres. In a similar fashion, both units base-hopped across the United States, stopping at bases equipped with their type of aircraft and pick up the best aircraft to go to Korea. The 27th FEOP loaded their F-84D/E Thunderjets aboard the USS Wyndham Bay in San Diego, which would transport the entire unit to Yokosuka, Japan. Two weeks later, the carrier docked at Yokosuka, where the air-

craft were off-loaded onto barges and transported across the harbor to Kasaizu Air Base to be put back into flying condition. Although many aircraft were seriously damaged from salt spray corrosion, the 27th was able to begin flying combat missions from Taegu on 6 December 1950, a full eleven days before the 4th FIGP flew their first Sabre combat sweep.

Although never the equal to the MiG-15, the F-84 was just fast enough, and just maneuverable enough, to usually evade trouble. These characteristics were greatly enhanced by the much better pilot training program that US Air Force officers went through before joining a combat unit. Many times the F-84s were used in the bomber escort role, the mission that SAC had trained them for. But both the F-84s and the B-29s they were escorting needed F-86s flying top cover. If the MiGs managed to break through the Sabre top cover there was little the F-84 pilots could do against them. The MiGs were simply too fast. The Thunderjets themselves, had to have Sabre top cover if a fighter-bomber mission was laid on for MiG Alley.

Throughout the war years 5th Air Force was constantly upgrading and expanding their fighter-bomber force, either through conversion of an ex-sling unit into F-84s, or by adding another F-84 unit to the theater inventory. And here comes the late of the markings dilemma regarding the F-84 force in Korea. With 5th AF constantly shuttling F-84 units in and out of Korea, and from one base to another in Korea, or adding another squadron to the inventory, markings information became very muddled. And wing personnel quite often did not have the time or the energy to change the unit identification markings on the aircraft. Thus, they would simply adopt the previous unit's markings as their own, or make some minor change to differentiate one unit from the other.

When the Reds accelerated the war in Korea through the use of the MiG-15, the US 5th Air Force countered by sending 27th FEOP F-84D/E Thunderjets and 4th FIGP F-86A Sabres to the front. The Thunderjet, although no match for the much faster MiG-15, would become "Champion of the Fighter-Bombers in Korea". (USAF)





An F-84E from the 136th FBGp, an Air National Guard unit activated during the Korean War. This aircraft has over 1000 combat hours and 400 combat missions as denoted by the Red bomb markers on the nose. The nose ring, tail stripe, and arrow on the wingtip tank is Insignia Red. (USAF)

(Right) Fighter pilots talk with their hands. 1st Lt. Arthur Olliger and Captain Harry Underwood describe the action when they shared a MiG-15 kill in July 1951. Both pilots are with the 136th FBGp. Thunderjet pilots shot down nine MiG-15s during the Korean War. (USAF)

All major maintenance on the F-84s in Korea was performed at the REMCO (Rear Echelon Maintenance Combined Operations) facility at Itazuke AB, Japan. The aft fuselage sections have been removed and the engines taken to another area for testing and rebuilding. The armament bay is in the upper nose, while the battery hangs down behind the nose gear well. (USAF)





JATO was extensively used in Korea, both on F-80 and F-84 fighter-bombers, due to the shortness of Korean airbase runways. The JATO bottles were jettisoned immediately after takeoff and retrieved by ground crews to be used again. (USAF)

(Left) Battle damage on a 27th FEGr F-84E demonstrates that the Thunderjet could take some pretty severe hits and still bring the pilot home. (Watt)

"Pretty Peggy", an F-84G from the 7th FB Sq/49th FB Gp. "Peggy" is the squadron commander's aircraft as denoted by the seven Insignia Blue and White stripes on the wingtip tanks. The tail stripes are also Insignia Blue and White, while the nose ring is Blue and the name is Insignia Red. (Stone via Thompson)



For example, the 27th FE Group arrived in Korea with F-84Ds and Es in December 1950. Their unit D markings were a diagonal stripe on the vertical and horizontal stabilizer in the squadron color. Additionally, the nose ring and an added flash, plus an arrow on the outside of each wingtip tank, were also painted in the squadron color. When they were relieved in May 1951 by the 138th Fighter-Bomber Group, an activated Air National Guard unit, the 136th crews simply adopted the 27th Group markings as their own, and added a squadron nose gear decal to some aircraft. When the 136th was returned to state control in July 1952, it was a paper transfer. The unit was simply renumbered the 58th Fighter Bomber Group. The aircraft and many of the Air Guard crews remained in Korea. These crews added a simple black trim line to all the existing markings, and removed the 136th unit decal. Now add to this the fact that both the 474th FBGp and 58th FBGp were part of the 58th FBWg, with aircraft being interchanged all the time, and one begins to see the problems associated with trying to identify an aircraft in a photo by the markings on the aircraft. It's very possible to see a photo of the ramp at Taegu in 1953 and see every possible tail marking — and still be looking at only one group's aircraft.

By war's end, 5th Air Force had three F-84 equipped groups — the 49th FBGp which had transitioned from F-80Cs into new F-84Es during the Spring of 1951, the 474th FBGp which had evolved from the 116th FBGp, another activated Air Guard unit sent to Korea in late July 1951, and the 58th FBGp. Two other F-84G units were on duty in Japan for various periods during the war. Both were the result of SAC testing the new long legs of its fighter arm without flight refueling capability. Under Operation Fox Peter One, the 31st FE Gp flew from Turner AFB, Georgia to Misawa AB, Japan in July 1952. The following October Operation Fox Peter Two sent the 27th FE Wg, led by Colonel Donald Brakeslee from Bergstrom AFB, Texas, to Misawa. Both units were assigned to the Japan Air Defense Force.

Inflight refueling of F-84s was not new as two EF-84Es with experimental British inflight refueling LRU probes mounted on the leading edge of the port wing for connection with an inflight refueling drogue trailing behind British Lancaster tanker aircraft had flown non-stop from England to the US on 22 September 1950. The probe and drogue system was authorized for combat testing in Korea under the innocent code name of Project HI TIDE. The aircraft and crews came from the 116th FBGp, which was still based at Misawa while awaiting deployment orders to Korea. This time the refueling probes were mounted on the wingtip tanks on F-84Es. Only the tip tanks could be refueled. The KB-29P tanker aircraft came from the 43rd Air Refueling Squadron, Detachment 4, which was attached to the 91st Strategic Recon Squadron at Yokota.

The first combat mission took place on 29 May 1952 after many simulated missions had been flown around Japan. The mission was staged through Iwazuke AB, Japan, about as

close to Korea as possible. Twelve aircraft were loaded with 500 lb bombs and took off for North Korea. Their target was the industrial complex in and around the town of Sariwon, about 500 miles north of Iwazuke. After attacking the targets, the F-84Es headed for the



"Thanatosis", F-84E serial 50-1225, during an engine change at Taegu AB, Korea. High time engines were replaced in the field and then flown back to Iwazuke REMCO for rebuilding. The aircraft carries the Red and White tail stripes of the 8th FBGp, 49th FBGp. (Thompson)

The 474th FBGp begins to taxi out to the active runway at Kunsan AB, Korea in February 1953. All the aircraft are armed with napalm canisters for an apparent strike against Red troop concentrations along the 38th Parallel. (USAF)



waiting tankers over Taegu. Nine aircraft completed the hookup and went home to Johnson AB, Japan. Three aircraft had to land at Taegu, two did not have enough fuel to complete the refueling hookup, while the third was forced down when the tanker hose



An F-84E from the 158th FBSq, 116th FBGp is plugged into the refueling drogue of a 43rd Air Refuelling Squadron KB-29M during Operation HI-TIDE, the first combat inflight refueling of operational combat aircraft. (Mason via Menard)

A HI-TIDE aircraft from the 158th FBSq with refueling probes mounted in the wingtip tank. Only the wingtip tanks could be refueled by this method and only Far East Air Force F-84s had the modified wingtip tanks. (Mason via Menard)



broke. Three more missions were flown by the 116th HI-TDE crews; on 7 June they again went to Sariwon to attack the airfield, refueling over the Tsushima Strait inbound to the target on 22 June to Haeju, again refueling on the inbound leg only and on the 4th of July to Pyongyang refueling both inbound and outbound. Completely successful, only being hampered by bad weather, the inflight refueling missions were held to a minimum as the combat units were moved to bases on the Korean peninsula. The inflight refueling missions culminated with the 800 mile strike against the industrial targets at Chongjin on 5 March 1953.

F-84s were involved in every major air operation during the final two and one half years of the air war in Korea. The great dam raids of the Summer of 1952 which ultimately led to total loss of all electrical power to all of North Korea and most of Manchuria, were flown by 5th AF and Navy/Marine crews. The 5th AF crews were for the most part flying F-84 Thunderjets. The May Day attack against the Pyongyang Radio Station was another major act on And finally, the straw that broke the back of Red resistance - the attacks against the irrigation dams of North Korea in mid-May 1953. These attacks by 5th AF fighter bombers, mainly F-84 Thunderjets, demonstrated to the Reds the willingness and capability of 5th AF to bring the war right to their front door - and slam it in their faces.

On 27 July 1953, the Korean War ended much the same as it had begun - with Korea divided between communism and democracy. But the F-84 Thunderjet had won an important victory. Republic's Hog had demonstrated its ability to do the job for which it had been designed. Thunderjets had flown 86,408 sorties, dropped 50,427 tons of bombs and 5,560 tons of napalm. They had fired 22,154 rockets and unloaded amounts of 50 calibre ammunition. Nine MiG-15s were officially credited as shot down by F-84 crews. Another 96 were damaged or probably shot down. Against these totals were eighteen Thunderjets lost to MiG interceptors. A further 135 went down to enemy anti-aircraft. The Republic F-84 Thunderjet had lived up to its famous 'Thunder' heritage.

An F-84G-1 from the 116th FBGp on the ramp at Taegu in 1952. The 116th was the second Air Guard F-84 unit to be called up for action in the Korean War. The nose ring, tip tank arrow, and tail bands are Yellow with Black trim for the 158th FBSq. The 116th FBGp was renumbered to the 50th FBGp in July 1952. (Taylor)





"Miss Jeanette", F-84E serial 51-653, from the 49th FBGp at Taegu. F-84 crews often named their aircraft without removing the previous crews personal markings. (AFM)

"Lil' Butch" from the 9th FBSq, 49th FBGp, with a full combat load of two 500 lb GP bombs, four 6 inch HVAR rockets, and two JATO bottles. "Butch" is the squadron CO's aircraft as denoted by the multiple Red and White wingtip tank stripes. (Galbraith via Menard)

An obvious change has taken place here. But what radio call sign is used — "Air Force 51" or "Air Force 545"? Although having a mismatched fore and aft fuselage, the aircraft is fully combat operational, an indication of how badly the F-84s were needed in Korea. (Galbraith via Menard)





A trio of 9th FBSq F-84Gs sit combat ready in the snow at Taegu. The canopy and all flying surfaces are covered with canvas tarps to prevent ice build-up on moving parts and flying surfaces. (AFM)



The Fighter-Bomber Workhorse of Korea sits ready on the Taegu ramp for the next strike against North Korean targets. F-84 crews dropped over 55,000 tons of explosives during the two and one half years they were operational in Korea. Note the entry ladder common to all versions of the F-84. (AFM)



An F-84G from the 9th FBSq over Japan in December 1953. Even though the G model was built to accept the Boeing flying boom refueling method, FEAF F-84Gs still used the modified wingtip tanks with probes as all the tankers in the Far East used the probe and drogue system. (USAF)